

OPERATING DATA (RATED)				
SEE NOTES 2, 3				
LINE	PSIG	LB/HR	°F	REMARKS
1	959	186954	541	75% LOAD
2	546	195854	479	

DESIGN DATA				
LINE	NORMAL PSIG	NORMAL °F	UPSET PSIG	UPSET °F
1	1250	575		
2	620	495		

- NOTES:
- ALL PANELS AND RACKS ARE PREFIXED IH13, UNLESS OTHERWISE NOTED.
 - PROCESS DATA SHOWN IN THE OPERATING DATA TABLE ON THIS SYSTEM DIAGRAM SHALL BE USED IN CONJUNCTION WITH THE DESIGN BASIS INFORMATION AND SHALL BE USED WITH CAUTION. IN GENERAL, THE OPERATING DATA (PRESSURES, TEMPERATURES, AND FLOWS) PROVIDED ON THIS DRAWING REPRESENTS THE MOST COMMON OPERATING CONDITION, AND/OR SYSTEM MODE OF OPERATION AND/OR LINEUP, TO DETERMINE THE REQUIRED VALUES FOR A SPECIFIC OPERATING CONFIGURATION, THE APPROPRIATE DESIGN DOCUMENTS NEED TO BE REVIEWED.
 - OPERATING DATA IS TYPICALLY DERIVED FROM GE THERMAL KIT HEAT BALANCES. THE THERMAL KIT HEAT BALANCES ARE KEPT IN DESIGN INPUT RECORD (DIR) 237. OPERATING DATA SHOWN IS FOR RATED CONDITIONS APPLICABLE TO THE IMPLEMENTATION OF THE FOLLOWING PLANT CHANGES:
 - a. POWER UPGRADE TO 105% OF THE ORIGINAL DESIGN (REF: 1AF 81794)
 - b. PARTIAL ARC ADMISSION (REF: DCP 98-0050)
 - NOTE: PARTIAL ARC PARAMETER CHANGES (UP & DOWN) ARE SHOWN ONLY IF THEY ARE GREATER THAN 1% OF THE POWER UPGRADE VALUES.
 - c. LOW PRESSURE TURBINE ROTOR REPLACEMENT (REF: ECP 04-0070).

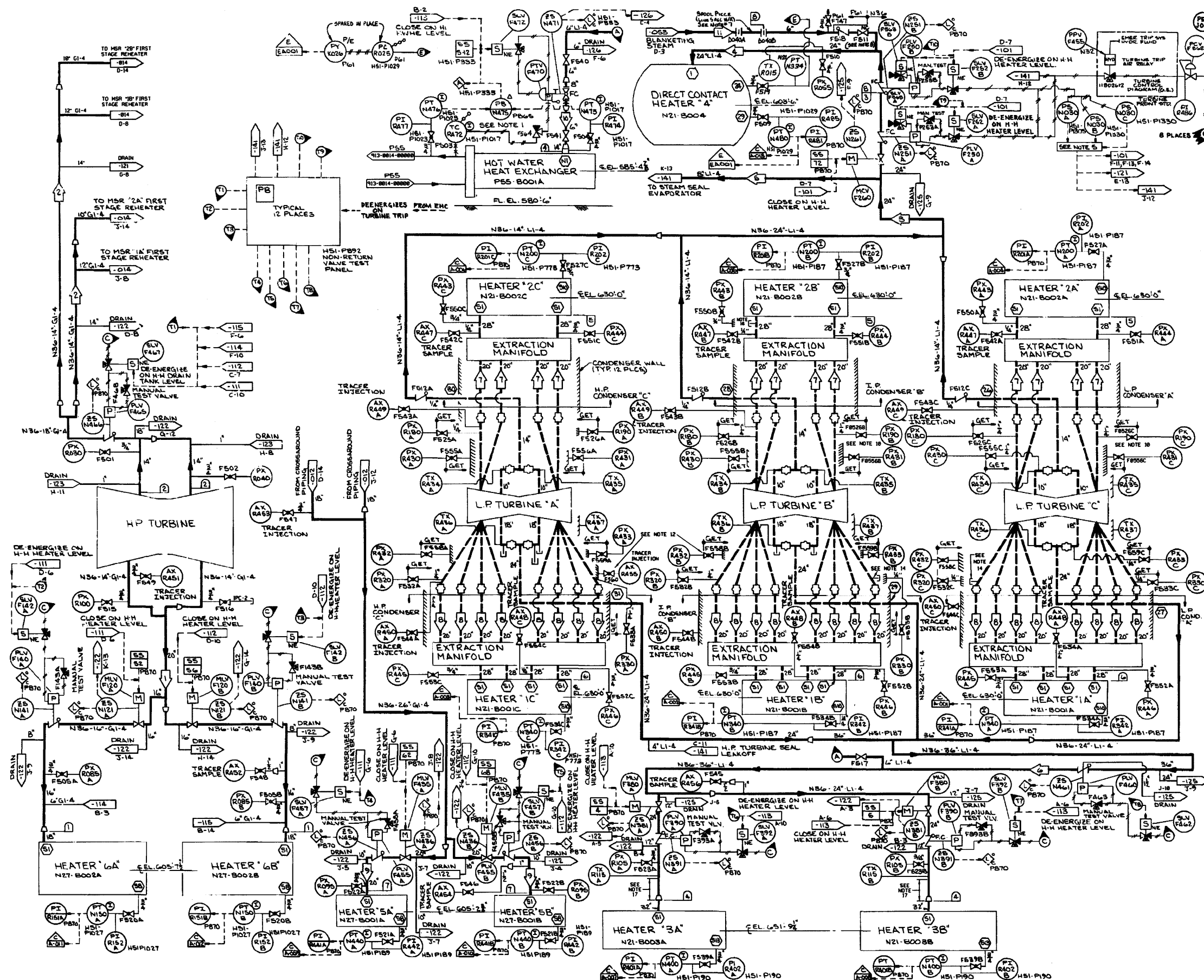
- REFERENCES:
- 302-0011-00000 MAIN STEAM SYSTEM N11
 - 302-0012-00000 REHEAT STEAM SYSTEM N11
 - 302-0041-00000 EXTRACTION STEAM N36
 - 302-0111-00000 HIGH PRESSURE HEATER DRAINS AND VENTS 'A' N25
 - 302-0121-00000 MAIN, REHEAT, EXTRACTION AND MISCELLANEOUS DRAINS N22
 - 43-0099-00000 REHEATER HEATING STEAM PIPING/PROTECTION DIAGRAM GET

(REV. 20 10/2017)

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

REHEATER HEATING STEAM SYSTEM

FIGURE 10.1-1 (SHEET 3 OF 3)
(DWG. D-302-0014-00000)



OPERATING DATA (RATED)
SEE NOTES 9 & 11

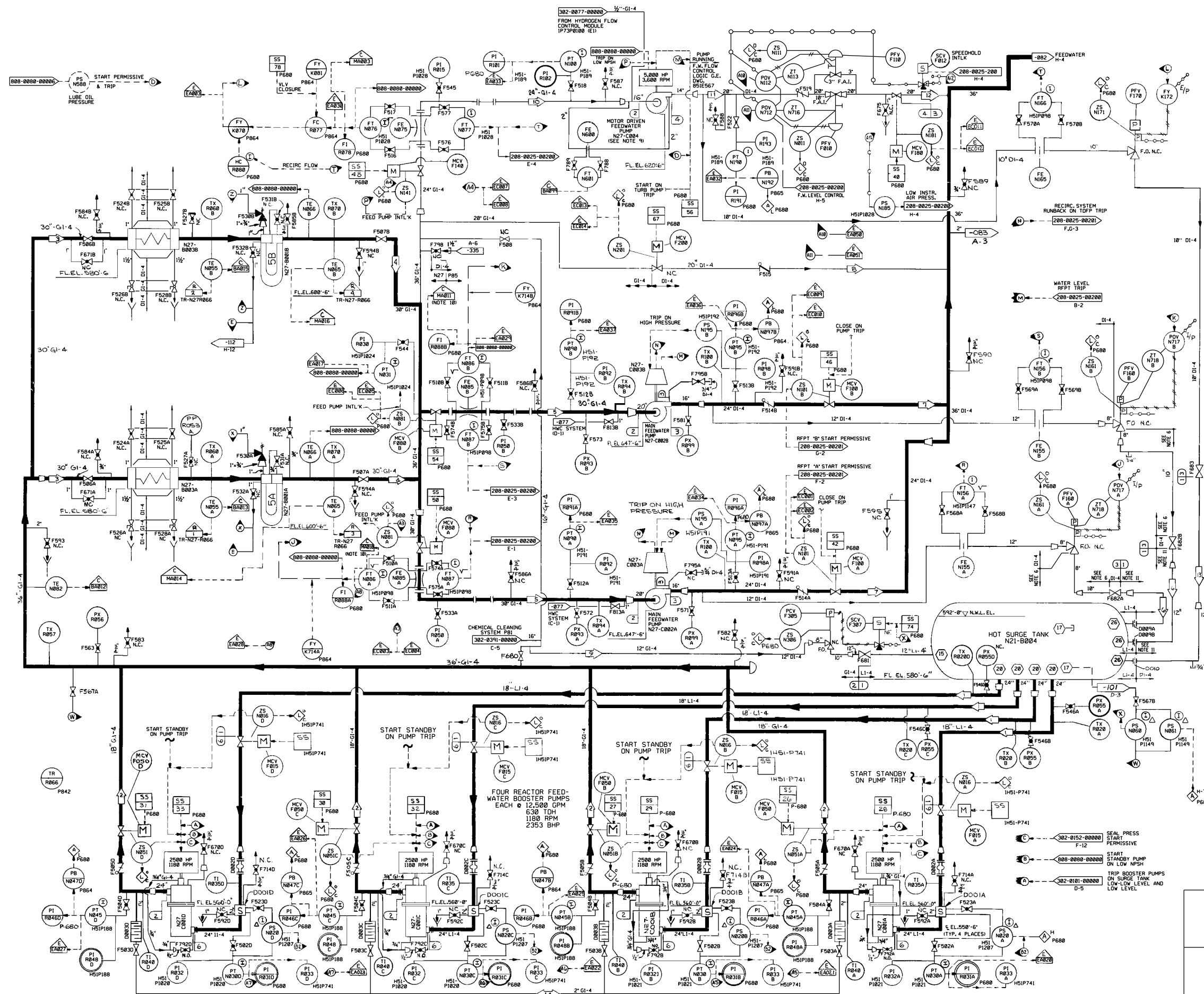
LB/HR	PSIA	F	REMARKS
1	873.789	362	4th STAGE EXTRACTION
2	391.789	561	2nd STAGE
3	382.119	187	8th STAGE
4	386.758	187	4th STAGE
5	23.361	187	4th STAGE
6	789.824	64	3th STAGE
7	54.959	19.6	11th STAGE (VAPOR)
8	1.497	19.6	11th STAGE (MOISTURE)
9	19.228	5.3	16th STAGE (VAPOR)
10	5.387	5.3	16th STAGE (MOISTURE)
11	4.779	5.3	16th STAGE (MOISTURE BLOWDOWN)
12	382.533	195	388
13	48.800	65.4	286
14	8	165	366
15			MAXIMUM SHUTDOWN

- REFERENCES:
- 382-0014-00000 REHEAT HEATING STEAM SYSTEM N11
 - 382-0181-00000 CONDENSATE SYSTEM N21
 - 382-0111-00000 HIGH PRESSURE HEATER DRAINS AND VENTS "N" SYSTEM N25
 - 382-0112-00000 HIGH PRESSURE HEATER DRAINS AND VENTS "N" SYSTEM N25
 - 382-0113-00000 LOW PRESSURE HEATER DRAINS AND VENTS SYSTEM N25
 - 382-0121-00000 MAIN REHEAT, EXTRACTION, AND MISCELLANEOUS DRAINS SYSTEM N22
 - 382-0122-00000 MAIN REHEAT, EXTRACTION, AND MISCELLANEOUS DRAINS SYSTEM N22
 - 382-0123-00000 MAIN REHEAT, EXTRACTION, AND MISCELLANEOUS DRAINS SYSTEM N22
 - 382-0125-00000 MAIN REHEAT, EXTRACTION, AND MISCELLANEOUS DRAINS SYSTEM N22
 - 382-0141-00000 STEAM SEAL SYSTEM N23
 - 382-0142-00000 HOT WATER HEATING SYSTEM N23
 - 382-0143-00000 BUILDING AND TURBINE POWER COMPLEX P25
 - 382-0144-00000 TURBINE CONTROL, DIAGRAM SYSTEM N22 (G.E.)
 - 382-0145-00000 HIGH PRESSURE HEATER DRAINS AND VENTS "N" SYSTEM N25
 - 382-0146-00000 HIGH PRESSURE HEATER DRAINS AND VENTS "N" SYSTEM N25
 - 382-0147-00000 EXTRACTION DIAGRAM (G.E.)
 - 382-0148-00000 REHEAT HEATING STEAM SYSTEM N11
 - 382-0149-00000 HOT WATER HEATING SYSTEM N23
 - 382-0150-00000 MAIN REHEAT, EXTRACTION, AND MISCELLANEOUS DRAINS SYSTEM N22
 - 382-0151-00000 AUXILIARY STEAM SYSTEM N21

DESIGN DATA

ID	NORMAL		UPSET		REMARKS
	PSIG	F	PSIG	F	
1	395	450			
2	629	495			
3	110	430			
4	75	330			
5	50	240			
6	50	185			
7	200	305			
8	120	430			

- NOTES:
- PRESSURE INSTALLED ENERGIZES WHEN SHELL PRESSURE EXCEEDS TURBINE PRESSURE.
 - ALL INSTRUMENTS AND CONTROL DEVICES CARRY PREFIX NOG. EXCEPT AS NOTED.
 - ALL PANELS OR RACKS ARE PREFIXED THIS, UNLESS OTHERWISE NOTED.
 - ALL VALVES IN THE N21 AND N22 HEATER EXTRACTION LINES AND THE 1ST STAGE REHEATER STEAM SUPPLY LINES ARE CARBON STEEL.
 - TWO OUT OF THREE LOGIC.
 - ASME TEST CONNECTION VALVES F5548, F5549, F5550, F5551, F5552, F5553, F5554, F5555, F5556, F5557, F5558, F5559, F5560, F5561, F5562, F5563, F5564, F5565, F5566, F5567, F5568, F5569, F5570, F5571, F5572, F5573, F5574, F5575, F5576, F5577, F5578, F5579, F5580, F5581, F5582, F5583, F5584, F5585, F5586, F5587, F5588, F5589, F5590, F5591, F5592, F5593, F5594, F5595, F5596, F5597, F5598, F5599, F5600, F5601, F5602, F5603, F5604, F5605, F5606, F5607, F5608, F5609, F5610, F5611, F5612, F5613, F5614, F5615, F5616, F5617, F5618, F5619, F5620, F5621, F5622, F5623, F5624, F5625, F5626, F5627, F5628, F5629, F5630, F5631, F5632, F5633, F5634, F5635, F5636, F5637, F5638, F5639, F5640, F5641, F5642, F5643, F5644, F5645, F5646, F5647, F5648, F5649, F5650, F5651, F5652, F5653, F5654, F5655, F5656, F5657, F5658, F5659, F5660, F5661, F5662, F5663, F5664, F5665, F5666, F5667, F5668, F5669, F5670, F5671, F5672, F5673, F5674, F5675, F5676, F5677, F5678, F5679, F5680, F5681, F5682, F5683, F5684, F5685, 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F7116, F7117, F7118, F7119, F7120, F7121, F7122, F7123, F7124, F7125, F7126, F7127, F7128, F7129, F7130, F7131, F7132, F7133, F7134, F7135, F7136, F7137, F7138, F7139, F7140, F7141, F7142, F7143, F7144, F7145, F7146, F7147, F7148, F7149, F7150, F7151, F7152, F7153, F7154, F7155, F7156, F7157, F7158, F7159, F7160, F7161, F7162, F7163, F7164, F7165, F7166, F7167, F7168, F7169, F7170, F7171, F7172, F7173, F7174, F7175, F7176, F7177, F7178, F7179, F7180, F7181, F7182, F7183, F7184, F7185, F7186, F7187, F7188, F7189, F7190, F7191, F7192, F7193, F7194, F7195, F7196, F7197, F7198, F7199, F7200, F7201, F7202, F7203, F7204, F7205, F7206, F7207, F7208, F7209, F7210, F7211, F7212, F7213, F7214, F7215, F7216, F7217, F7218, F721



OPERATING DATA (RATED)				
SEE NOTES 7, 8				
PSIA	GPM	°F	REMARKS	
1	108	11,991	329	
2	362	11,981	329	
3	345	17,996	370	
4	315	18,494	370	
5	292	18,494	370	
6	10	4,000	125	START-UP
7	1127	18,436	372	
8	288	7,500	75	PRESTART-UP
9	288	5,000	125	START-UP
10	292	8,300	369	
11	1120	8,278	370	UPSET CONDITION
12	1085	8,278	370	UPSET CONDITION
13	98	4,000	125	MOFP START-UP
14	300	25-110	329	

DESIGN DATA				
D	NORMAL PSIG	UPSET PSIG	F TIME	REMARKS
1	128	358	128	358
2	500	400	500	400
3	1500	400	1500	400
4	1540	400	1540	400
5	128	400	128	400
6	145	358	145	358
				SEE NOTE 12 FOR STRAINERS IN2700000A, B, C, & D

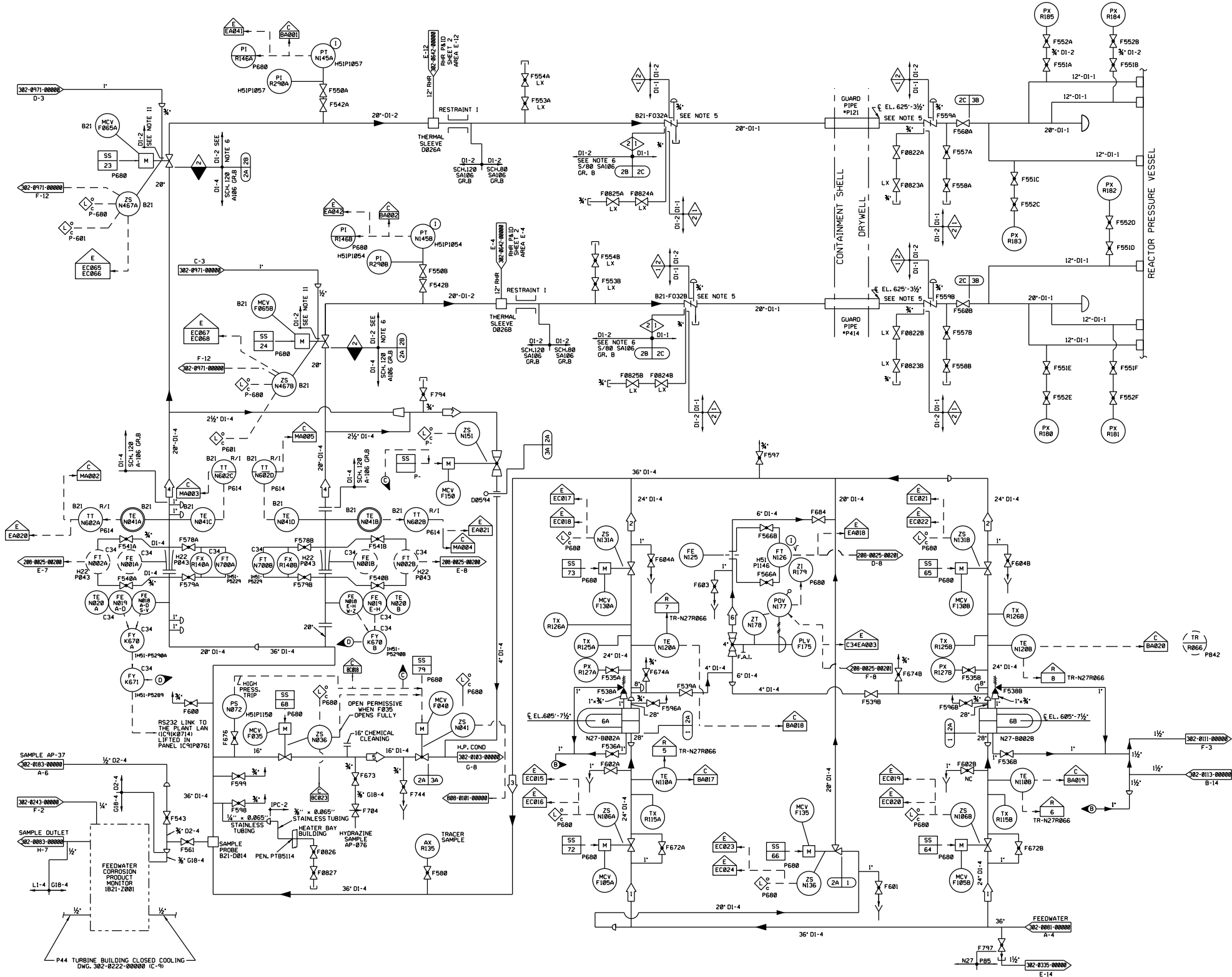
- NOTES:
- ITEMS SUPPLIED BY G.E. HAVE PREFIX B21.
 - SEAL WATER SUPPLY PRESSURE 310 PSIA.
 - PIPING DRAINS ARE 1" AND PIPING VENTS ARE 3/4" UNLESS OTHERWISE NOTED.
 - ALL INSTRUMENTS AND CONTROLS ARE PREFIXED IN27, UNLESS OTHERWISE NOTED.
 - ALL PANEL AND RACKS CARRY PREFIX INH3, UNLESS OTHERWISE NOTED.
 - PIPE TO BE ASTM A312 TP 316L.
 - PROCESS DATA SHOWN IN THE OPERATING DATA TABLE ON THIS SYSTEM DIAGRAM SHALL BE USED IN CONJUNCTION WITH THE DESIGN BASIS INFORMATION AND SHALL BE USED WITH CAUTION. IN GENERAL, THE OPERATING DATA REPRESENTS THE MOST COMMON OPERATING CONDITION AND/OR SYSTEM MODE OF OPERATION AND/OR LINEUP. TO DETERMINE THE REQUIRED VALUES FOR A SPECIFIC OPERATING CONFIGURATION, THE APPROPRIATE DESIGN DOCUMENTS NEED TO BE REVIEWED.
 - OPERATING DATA IS TYPICALLY DERIVED FROM GE THERMAL KIT HEAT BALANCES. THE THERMAL KIT HEAT BALANCES ARE KEPT IN DESIGN INPUT RECORD DIR237. OPERATING DATA SHOWN IS FOR RATED CONDITIONS APPLICABLE TO THE IMPLEMENTATION OF THE FOLLOWING TYPICAL CHANGES:
 - POWER UPGRADE TO 105% OF THE ORIGINAL DESIGN (REF: TAF B1794)
 - PARTIAL ARE ADMISION (REF: DCP 98-0050) NOTE: PARTIAL ARE PARAMETER CHANGES UP & DOWN ARE SHOWN ONLY IF THEY ARE GREATER THAN 1% OF THE POWER UPGRADE VALUES.
 - LOW PRESSURE TURBINE ROTOR REPLACEMENT (REF: ECP 04-0070)
 - SEE DRAWING 26-0179-00000 FOR THE LUBE OIL SYSTEM COMPONENT INTERFACES WITH THE MOTOR DRIVEN FEEDWATER PUMP IN27C08004.
 - COMPUTER POINTS MA010 AND MA011 PROVIDE AVERAGE FEEDWATER PUMP SUCTION FLOW RATES - MA010 AVERAGES TRANSMITTERS IN27N0006A & B7A; MA011 AVERAGES IN27N0006B & B7B.
 - PIPE TO BE A335 GRADE P22.
 - F.W. BOOSTER PUMP STRAINERS IN27D0001A, B, C, & D HAVE A MAXIMUM WORKING PRESSURE OF 125 PSIG AT 350°F.
 - DELETED

- REFERENCES:
- 208-0025-00000 FEEDWATER CONTROL SYSTEM
 - 208-0149-00000 FEEDWATER ELEMENTARY DIAGRAM
 - 302-0082-00000 FEEDWATER N27
 - 302-0083-00000 FEEDWATER PUMP INJECTION AND WARM-UP
 - 302-0101-00000 CONDENSATE SYSTEM N21
 - 302-0152-00000 CONDENSATE SEAL SYSTEM P12
 - 302-0293-00000 M.F.P. TURBINE LUBE OIL FLOW DIAGRAM
 - 302-0295-00000 EXTENDED M.F.P. TURBINE 'A' FLOW DIAGRAM
 - 302-0296-00000 EXTENDED M.F.P. TURBINE 'B' FLOW DIAGRAM
 - 302-0391-00000 CHEMICAL CLEANING SYSTEM F81
 - 808-0080-00000 FEEDWATER LOOP DIAGRAMS
 - 26-0179-00000 LUBE OIL SYSTEM DIAGRAM FOR IN27C08004

(REV. 21 10/2019)

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

FEEDWATER
FIGURE 10.1-3 (SHEET 1 OF 2)
(DWG. D-302-0081-00000)



OPERATING DATA (RATED)				
ID	PSIA	GPM	°F	REMARKS
1	1127	18,436	372	
2	1113	19,188	425	
3	1113	38,377	425	
4	1100	19,188	425	
5	250	12,000	125	START-UP
6	935	600	125	START-UP
7	250	400	125	START-UP WITH DB594 OPEN

DESIGN DATA				
ID	NORMAL PSIG	UPSET °F	TIME	REMARKS
1	1500	400	1500	400
2A	1500	450	1500	450
2B	1250	550	1500	550
2C	1250	575	1500	575
3A	50	150	50	150
3B	1250	575	1250	575

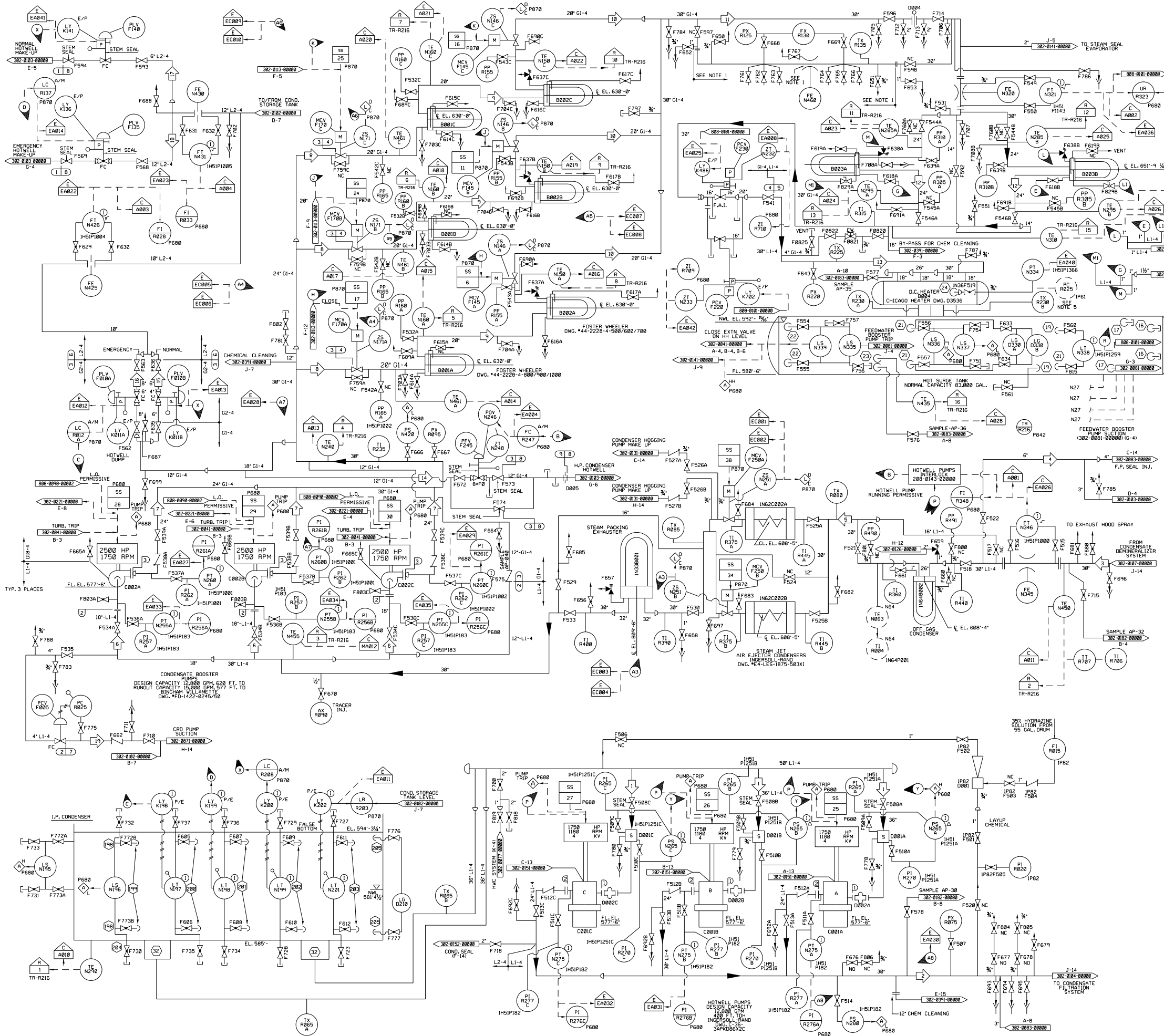
- NOTES:
- ALL PANELS AND RACKS ARE PREFIXED I113, UNLESS OTHERWISE NOTED.
 - ALL INSTRUMENTS AND CONTROLS ARE PREFIXED I127, UNLESS OTHERWISE NOTED.
 - PIPING DRAINS ARE 1" AND PIPING VENTS ARE 3/4", UNLESS OTHERWISE SPECIFIED.
 - TWO SETS OF PRESSURE TAPS ARE PROVIDED ON EACH FEEDWATER FLOW METER SECTION. PROCESS INSTRUMENT PIPING/TUBING SHALL BE RUN FROM BOTH SETS OF TAPS WITH ONE SET PERMANENTLY CONNECTED TO THE FEEDWATER FLOW TRANSMITTER AND THE ALTERNATE SET TERMINATING ADJACENT TO THE FLOW TRANSMITTER COMPLETE WITH BLOWDOWN, INSTRUMENT SHUTOFF, AND EQUALIZING VALVE MANIFOLD TO FACILITATE IN-SERVICE MONITORING OF FLOW ELEMENT CALIBRATION UTILIZING EITHER SET OF PRESSURE TAPS.
 - CONTROLLED CLOSURE ANTIWATER HAMMER LIFT CHECK VALVES.
 - CLASS 2 PIPING MUST MEET TESTING REQUIREMENTS OF ASME III, NB-2300.
 - THE DATA IN THE NORMAL COLUMN ARE THE SYSTEM DESIGN CONDITION.
 - DOUBLE ROOT VALVES EMANATING FROM SAFETY CLASS 1 PIPING ARE SAFETY CLASS 2 AT THE POINT OF CONNECTION WITH 3/4" PIPE OR FITTING AND CLASS 1 PIPE.
 - PROCESS DATA SHOWN IN THE OPERATING DATA TABLE ON THIS SYSTEM DIAGRAM SHALL BE USED IN CONJUNCTION WITH THE DESIGN BASIS INFORMATION AND SHALL BE USED WITH CAUTION. IN GENERAL, THE OPERATING DATA (PRESSURES, TEMPERATURES, AND FLOWS) PROVIDED ON THIS DRAWING REPRESENTS THE MOST COMMON OPERATING CONDITION AND/OR SYSTEM MODE OF OPERATION AND/OR LINE-UP TO DETERMINE THE REQUIRED VALUES FOR A SPECIFIC OPERATING CONFIGURATION, THE APPROPRIATE DESIGN DOCUMENTS NEED TO BE REVIEWED.
 - OPERATING DATA IS TYPICALLY DERIVED FROM OF THERMAL KIT HEAT BALANCES. THE THERMAL KIT HEAT BALANCES ARE KEPT IN DESIGN INPUT RECORD (DIR) 237. OPERATING DATA SHOWN IS FOR RATED CONDITIONS APPLICABLE TO THE IMPLEMENTATION OF THE FOLLOWING PLANT CHANGES:
 - POWER UPGRADE TO 105% OF THE ORIGINAL DESIGN (REF. J. 14-81744).
 - PARTIAL ARC ADMISSION (REF. J. DCP 98-0050) NOTE: PARTIAL ARC PARAMETER CHANGES UP & DOWN ARE SHOWN ONLY IF THEY ARE GREATER THAN 1% OF THE POWER UPGRADE VALUES.
 - LOW PRESSURE TURBINE ROTOR REPLACEMENT (REF. J. ECP 04-0070).
 - REQUIRED PIPE FROM PIPING HAVING A DESIGN TEMPERATURE OF 575°F TO PIPING HAVING A DESIGN TEMPERATURE OF 500°F. ANALYSIS WAS PERFORMED AT 575°F. 575°F SHALL BE USED FOR CONSERVATION.

- 302-0081-00000 FEEDWATER N27
302-0183-00000 CONDENSING - SYSTEM N21
302-0111-00000 HIGH PRESSURE HEATER DRAINS AND VENTS "H" N25
302-0183-00000 TURBINE PLANT SAMPLING SYSTEM P33
302-0642-00000 RESIDUAL HEAT REMOVAL E12
208-0025-00000 FEEDWATER CONTROL SYSTEM C34
808-0101-00000 CONDENSATE SYSTEM HOT SURGE TANK 3 ELEMENT
302-0771-00000 FEEDWATER LEAKAGE CONTROL SYSTEM N27
302-0222-00000 TURBINE BUILDING CLOSED COOLING SYSTEM P44

(REV. 21 10/2019)

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

FEEDWATER
FIGURE 10.1-3 (SHEET 2 OF 2)
(DWG. D-302-0082-00000)



OPERATING DATA				
#	PSIA	GPM	°F	REMARKS
1	VAC	11,251	101.1	RATED
2	190	22,582	101.3	RATED
3	124	22,582	101.3	RATED
4	124	200	102.4	RATED
5	114	22,308	102.4	RATED
6	95	11,129	104.3	RATED
7	352	11,122	104.9	RATED
8	330	7,415	104.9	RATED
9	319	7,522	157.2	RATED
10	308	7,700	219.1	RATED
11	308	23,100	219.1	RATED
12	293	11,923	288.6	RATED
13	105	23,847	288.6	
14	448	5,000	103.4	STARTUP (3500 MIN.)
15	12	1,000	103.4	INTERMITTENT
16	12	2,000	103.4	INTERMITTENT
17	20	1,000	65	INTERMITTENT
18	20	2,000	65	INTERMITTENT
19	50	60	104.3	

DESIGN DATA				
#	NORMAL	UPSET	TIME	REMARKS
1	254V	135	254V	135
2	250	140	250	140
3	600	140	600	140
4	600	320	600	320
5	120	250	120	250
6	50	140	50	140
7	50	140	250	140
8	25	140	25	140

- REFERENCES:
- 302-0083-00000 FEEDWATER N27
 - 302-0102-00000 CONDENSATE TRANSFER AND STORAGE SYSTEM P11
 - 302-0103-00000 CONDENSING SYSTEM N21
 - 302-0106-00000 CONDENSATE FILTRATION SYSTEM N23
 - 302-0107-00000 CONDENSATE DEMINERALIZER SYSTEM N24
 - 302-0131-00000 CONDENSATOR AIR REMOVAL SYSTEM N62
 - 302-0141-00000 STEAM SEAL SYSTEM N33
 - 302-0183-00000 TURBINE PLANT SAMPLING SYSTEM P33
 - 302-0182-00000 TURBINE PLANT SAMPLING SYSTEM P33
 - 302-0391-00000 CHEMICAL CLEANING OF CONDENSATE AND FEEDWATER SYSTEM P81
 - 809-0101-00000 HOT SURGE TANK LOOP DIAGRAM
 - 820E250A FEEDWATER ELEMENTARY DIAGRAM
 - 302-0151-00000 CONDENSATE SEAL P12
 - 302-0152-00000 CONDENSATE SEAL P12
 - 809-0090-00000 CONDENSATE SYSTEM LOOP DIAGRAMS
 - 208-0143-00000 CONDENSATE ELEMENTARY DIAGRAM
 - 302-0113-00000 LOW PRESSURE HEATER, DRAINS, AND VENT
 - 302-0071-00000 CONTROL ROD DRIVE HYDRAULIC SYSTEM C11
 - 302-0061-00000 FEEDWATER SYSTEM N27
 - 302-0041-00000 EXTRACTION STEAM SYSTEM N36
 - 302-0126-00000 MAIN, REHEAT, EXTRACTION, AND MISC. DRAINS SYSTEM N22
 - 302-0221-00000 TURBINE BLDG. CLOSED COOLING SYSTEM P44
 - 302-0077-00000 HYDROGEN WATER CHEMISTRY SYSTEM P73
 - 302-0104-00000 CONDENSATE FILTRATION SYSTEM N23
- NOTES:
1. PIPING AND COMPONENTS MAY OR MAY NOT BE INSTALLED FOR THE TEMPORARY TEST OF FLOW NOZZLE N460 COMMON TO UNIT 1 & 2.
 2. ALL PANELS ARE PREFIXED IHI-3 UNLESS OTHERWISE NOTED.
 3. ALL DRAINS 1", VENTS 3/4" UNLESS OTHERWISE SPECIFIED.
 4. DATA IN THE UPSET COLUMN ARE THE SYSTEM DESIGN CONDITIONS.
 5. VALVE P610005 HAS BEEN REMOVED FROM THE SYSTEM AND REPLACED WITH A SPOL, PIECE AND BLANKS. THIS INSTRUMENT IS ABANDONED IN PLACE.
 6. PROCESS DATA SHOWN IN THE OPERATING DATA TABLE ON THIS SYSTEM DIAGRAM SHALL BE USED IN CONJUNCTION WITH THE DESIGN BASIS INFORMATION AND SHALL BE USED WITH CAUTION. IN GENERAL, THE OPERATING DATA (PRESSURES, TEMPERATURES, AND FLOWS) PROVIDED ON THIS DRAWING REPRESENTS THE MOST COMMON OPERATING CONDITION AND/OR SYSTEM MODE OF OPERATION AND/OR LINEUP TO DETERMINE THE REQUIRED VALUES FOR A SPECIFIC OPERATING CONFIGURATION. THE APPROPRIATE DESIGN DOCUMENTS NEED TO BE REVIEWED.
 7. OPERATING DATA IS TYPICALLY DERIVED FROM GE THERMAL KIT HEAT BALANCES. THE THERMAL KIT HEAT BALANCES ARE KEPT IN DESIGN INPUT RECORD (DIR) 237. OPERATING DATA SHOWN IS FOR RATED CONDITIONS APPLICABLE TO THE IMPLEMENTATION OF THE FOLLOWING PLANT CHANGES:
 - a. POWER UPGRADE TO 105% OF THE ORIGINAL DESIGN (REF: 1AF-B1744)
 - b. PARTIAL ARC ADMISSION (REF: DCP-90-0050) NOT PARTIAL ARC PARAMETER CHANGES UP & DOWN ARE SHOWN ONLY IF THEY ARE GREATER THAN 1% OF THE POWER UPGRADE VALUES.
 - c. LOW PRESSURE TURBINE ROTOR REPLACEMENT (REF: ECP-04-00700)

(REV. 20 10/2017)

PERRY NUCLEAR POWER PLANT
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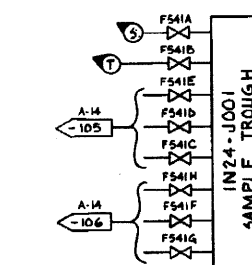
CONDENSATE
SYSTEM

FIGURE 10.1-4 (SHEET 1 OF 2)
(DWG. D-302-0101-00000)

OPERATING DATA

SEE NOTES 8, 9

LINE	PSIG	GPM	°F	REMARKS
1	145-175	22,582	181.1	NORMAL
2	175	25,427	148	MAX. FLOW
3	145-175	3,275	181.3	NORMAL
4	175	3633	148	MAX. FLOW
5	180	18,808	181.3	0.2 MIN. DURATION
6	3-15	-	-	-
7	3-9	-	-	-
8	3-15	-	-	-
9	9-15	-	-	-
10	15-3	-	-	-



DESIGN DATA

LINE	NORMAL PSIG	UPSET PSIG	°F	TIME	REMARKS
1	250	185	250	148	

NOTES:

- ALL PANELS AND RACKS ARE PREFIXED INH1, UNLESS OTHERWISE NOTED.
- DELETED
- DELETED
- DELETED
- ALL FILTERS AND PRECOAT EQUIPMENT EXCEPT HOPPER STAND ON FLOOR EL. 560'-5" REF. J.
- ALL EXTERNAL PIPING, EXCEPT SAMPLE TUBING, IS CARBON STEEL.
- TYPE "B" SAMPLE CONNECTION AS SHOWN ON DWG. 382-0771-000000.
- PROCESS DATA SHOWN IN THE OPERATING DATA TABLE ON THIS SYSTEM DIAGRAM SHALL BE USED IN CONJUNCTION WITH THE DESIGN BASIS INFORMATION AND SHALL BE USED WITH CAUTION. IN GENERAL, THE OPERATING DATA (PRESSURES, TEMPERATURES, AND FLOWS) PROVIDED ON THIS DRAWING, REPRESENTS THE MOST COMMON OPERATING CONDITION AND/OR SYSTEM MODE OF OPERATION AND/OR LINEUP. TO DETERMINE THE REQUIRED VALUES FOR A SPECIFIC OPERATING CONFIGURATION, THE APPROPRIATE DESIGN DOCUMENTS NEED TO BE REVIEWED.
- OPERATING DATA IS TYPICALLY DERIVED FROM GE THERMAL KIT HEAT BALANCES. THE THERMAL KIT HEAT BALANCES ARE KEPT IN DESIGN INPUT RECORD (DIR) 237. OPERATING DATA SHOWN IS FOR RATED CONDITIONS APPLICABLE TO THE IMPLEMENTATION OF THE FOLLOWING PLANT CHANGES:
 - POWER UPGRADE TO 100% OF THE ORIGINAL DESIGN (REF. J. TAP 81794)
 - PARTIAL AND ADMISSION (REF. J. DCP 98-0828) NOTE: PARTIAL AND ADMISSION CHANGES UP & DOWN ARE SHOWN ONLY IF THEY ARE GREATER THAN 1% OF THE POWER UPGRADE VALUES.
 - LOW PRESSURE TURBINE ROTOR REPLACEMENT (REF. J. ECP 84-0070).

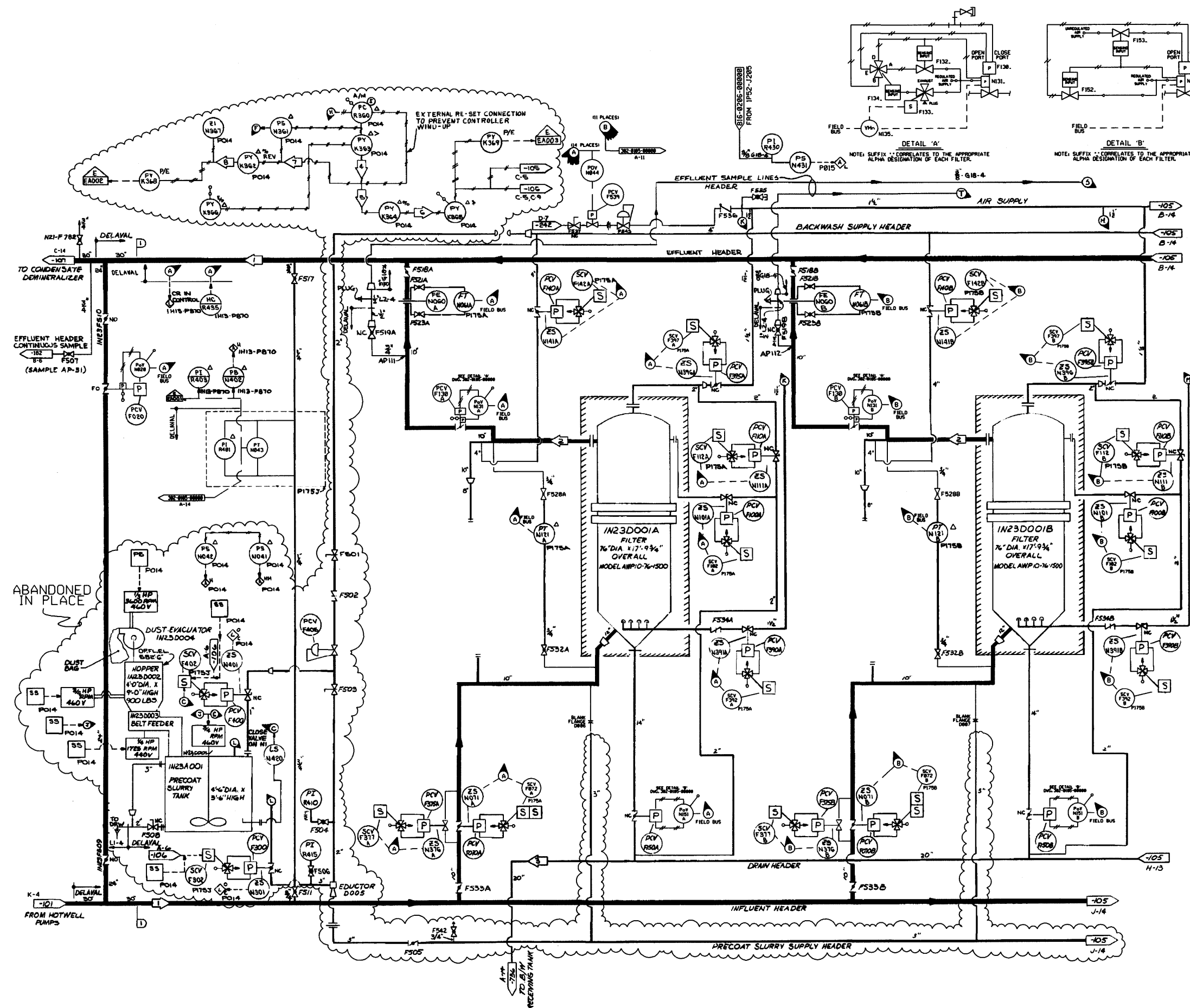
REFERENCES:

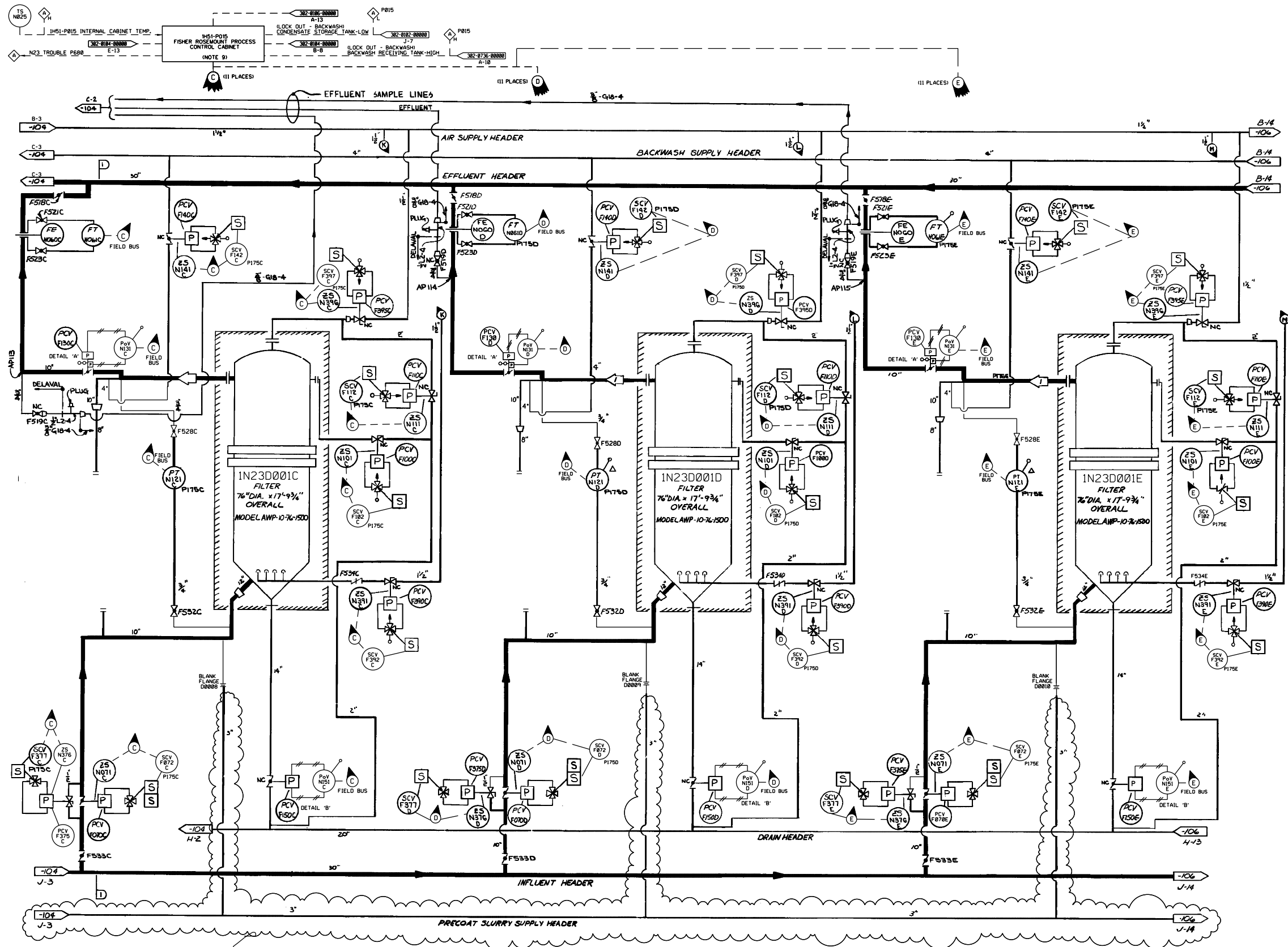
- 382-0101-00000 CONDENSATE SYSTEM N21
- 382-0105-00000 CONDENSATE FILTRATION SYSTEM N23
- 382-0106-00000 CONDENSATE FILTRATION SYSTEM N23
- 382-0107-00000 CONDENSATE DEMINERALIZER SYSTEM N24
- 382-0102-00000 TURBINE PLANT SAMPLING SYSTEM F33
- 382-0736-00000 LRV - TANKS AND PUMPS FOR HANDLING CONDENSATE BACKWASH SLURRY CSB

(REV. 19 10/2015)

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

CONDENSATE
FILTRATION SYSTEM
FIGURE 10.1-5 (SHEET 1 OF 3)
(DWG. D-302-0104-00000)





OPERATING DATA				
SEE NOTES 7, 8				
PSIG	GPM	°F	REMARKS	
1	145-175	3,215	181.3	NORMAL
1	175	3633	148	MAX.

DESIGN DATA				
D	NORMAL	UPSET	REMARKS	
PSIG	°F	PSIG	°F	TIME
1	250	185	250	148

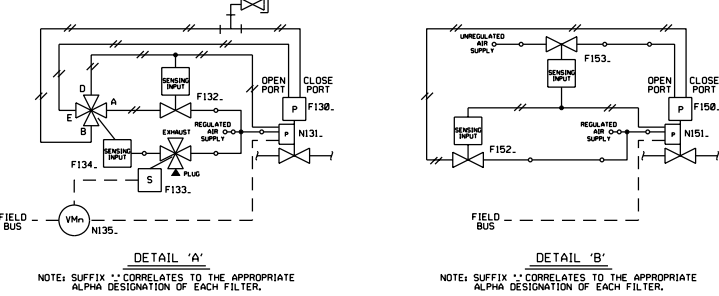
- REFERENCES:
- 302-0184-00000 CONDENSATE FILTRATION SYSTEM N23
 - 302-0185-00000 CONDENSATE FILTRATION SYSTEM N23
- NOTES:
- ALL PANELS & RACKS ARE PREFIXED IM51, UNLESS OTHERWISE SPECIFIED.
 - DELETED
 - DELETED
 - DELETED
 - ALL FILTERS STAND ON FLOOR EL. 568'-6" (REF.).
 - ALL EXTERNAL PIPING EXCEPT SAMPLE TUBING IS CARBON STEEL.
 - PROCESS DATA SHOWN IN THE OPERATING DATA TABLE ON THIS SYSTEM DIAGRAM SHALL BE USED IN CONJUNCTION WITH THE DESIGN BASIS INFORMATION AND SHALL BE USED WITH CAUTION. IN GENERAL, THE OPERATING DATA (PRESSURES, TEMPERATURES, AND FLOWS) PROVIDED ON THIS DRAWING REPRESENTS THE MOST COMMON OPERATING CONDITION, AND/OR SYSTEM MODE OF OPERATION AND/OR LINEUP. TO DETERMINE THE REQUIRED VALUES FOR A SPECIFIC OPERATING CONFIGURATION, THE APPROPRIATE DESIGN DOCUMENTS NEED TO BE REVIEWED.
 - OPERATING DATA IS TYPICALLY DERIVED FROM GE THERMAL KIT HEAT BALANCES. THE THERMAL KIT HEAT BALANCES ARE KEPT IN DESIGN INPUT RECORD (DIR) 237. OPERATING DATA SHOWN IS FOR RATED CONDITIONS APPLICABLE TO THE IMPLEMENTATION OF THE FOLLOWING PLANT CHANGES:
 - a) POWER UPGRADE TO 105% OF THE ORIGINAL DESIGN (REF.: TAF 81794)
 - b) PARTIAL ARC ADMISSION (REF.: DCP 98-0050) NOTE: PARTIAL ARC PARAMETER CHANGES (UP & DOWN) ARE SHOWN ONLY IF THEY ARE GREATER THAN 1% OF THE POWER UPGRADE VALUES.
 - c) LOW PRESSURE TURBINE ROTOR REPLACEMENT (REF.: ECP 04-0070).
 - THE CONTROL AND MONITORING OF EACH FILTER UNIT IS COMPLETED WITHIN THE FISHER ROSEMOUNT CONTROL PROCESSOR. ALL OPERATOR INPUT / OUTPUT INTERFACING IS CONDUCTED THROUGH A MONITOR AND KEYBOARD AT THE IM51P015 PANEL.
 - FFFF - VALVE IDENTIFICATION NUMBER ("") REPRESENTING LETTER DESIGNATION.

(Rev. 18 10/13)

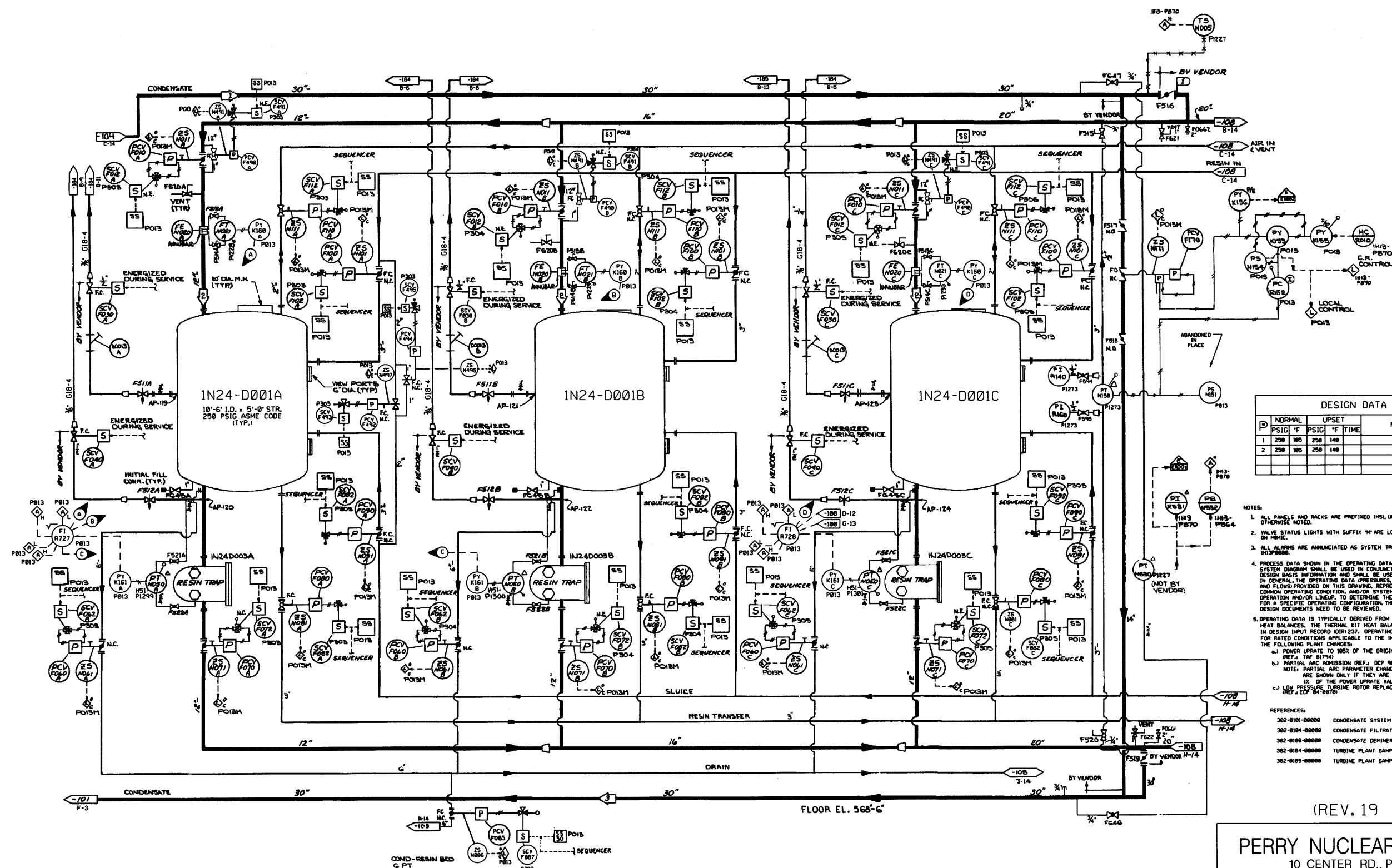
PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

CONDENSATE FILTRATION SYSTEM

FIGURE 10.1-5 (SHEET 2 OF 3)
(DWG. D-302-0105-00000)



OPERATING DATA				
SEE NOTES 4, 5				
LINE	PSIG	GPM	°F	REMARKS
1	175	22,502	181.3	
2	175	8,458	181.3	
3	110	22,502	181.3	



DESIGN DATA				
LINE	NORMAL PSIG	UPSET °F	TIME	REMARKS
1	250	185	250	140
2	250	185	250	140

- NOTES:
- ALL PANELS AND RACKS ARE PREFIXED INSL UNLESS OTHERWISE NOTED.
 - VALVE STATUS LIGHTS WITH SUFFIX "A" ARE LOCATED ON INSL.
 - ALL ALARMS ARE ANNUNCIATED AS SYSTEM TROUBLE ON INSL.
 - PROCESS DATA SHOWN IN THE OPERATING DATA TABLE ON THIS SYSTEM DIAGRAM SHALL BE USED IN CONJUNCTION WITH THE DESIGN BASIS INFORMATION AND SHALL BE USED WITH CAUTION. IN GENERAL, THE OPERATING DATA REPRESENTS THE MOST COMMON OPERATING CONDITION AND/OR SYSTEM MODE OF OPERATION AND/OR LINEUP. TO DETERMINE THE REQUIRED VALUES FOR A SPECIFIC OPERATING CONFIGURATION, THE APPROPRIATE DESIGN DOCUMENTS NEED TO BE REVIEWED.
 - OPERATING DATA IS TYPICALLY DERIVED FROM DE THERMAL KIT HEAT BALANCES. THE THERMAL KIT HEAT BALANCES ARE KEPT IN DESIGN INPUT RECORD QIRI 237. OPERATING DATA SHOWN IS FOR RATED CONDITIONS APPLICABLE TO THE IMPLEMENTATION OF THE FOLLOWING PLANT CHANGES:
 - POWER UPGRADE TO 105% OF THE ORIGINAL DESIGN (REF. 104 81740)
 - PARTIAL ARC ADMISSION REF. DCP 98-0050
 NOTE: PARTIAL ARC PARAMETER CHANGES UP & DOWN ARE SHOWN ONLY IF THEY ARE GREATER THAN 1% OF THE POWER UPGRADE VALUES.
 c) LOW PRESSURE TURBINE ROTOR REPLACEMENT (REF. 104 84-0070)
- REFERENCES:
- 302-0101-00000 CONDENSATE SYSTEM N21
 - 302-0104-00000 CONDENSATE FILTRATION SYSTEM N23
 - 302-0106-00000 CONDENSATE DEMINERALIZER SYSTEM N24
 - 302-0104-00000 TURBINE PLANT SAMPLING SYSTEM P32
 - 302-0105-00000 TURBINE PLANT SAMPLING SYSTEM P33

(REV. 19 10/2015)

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

CONDENSATE
DEMINERALIZER SYSTEM
FIGURE 10.1-6 (SHEET 1 OF 4)
(DWG. D-302-0107-00000)

DESIGN DATA						
ID	Material	F	E	Yield	σ_u	Remarks
1	Al 6061	120	80	170	---	
2	Al 6061	120	80	120	---	

NOTES:

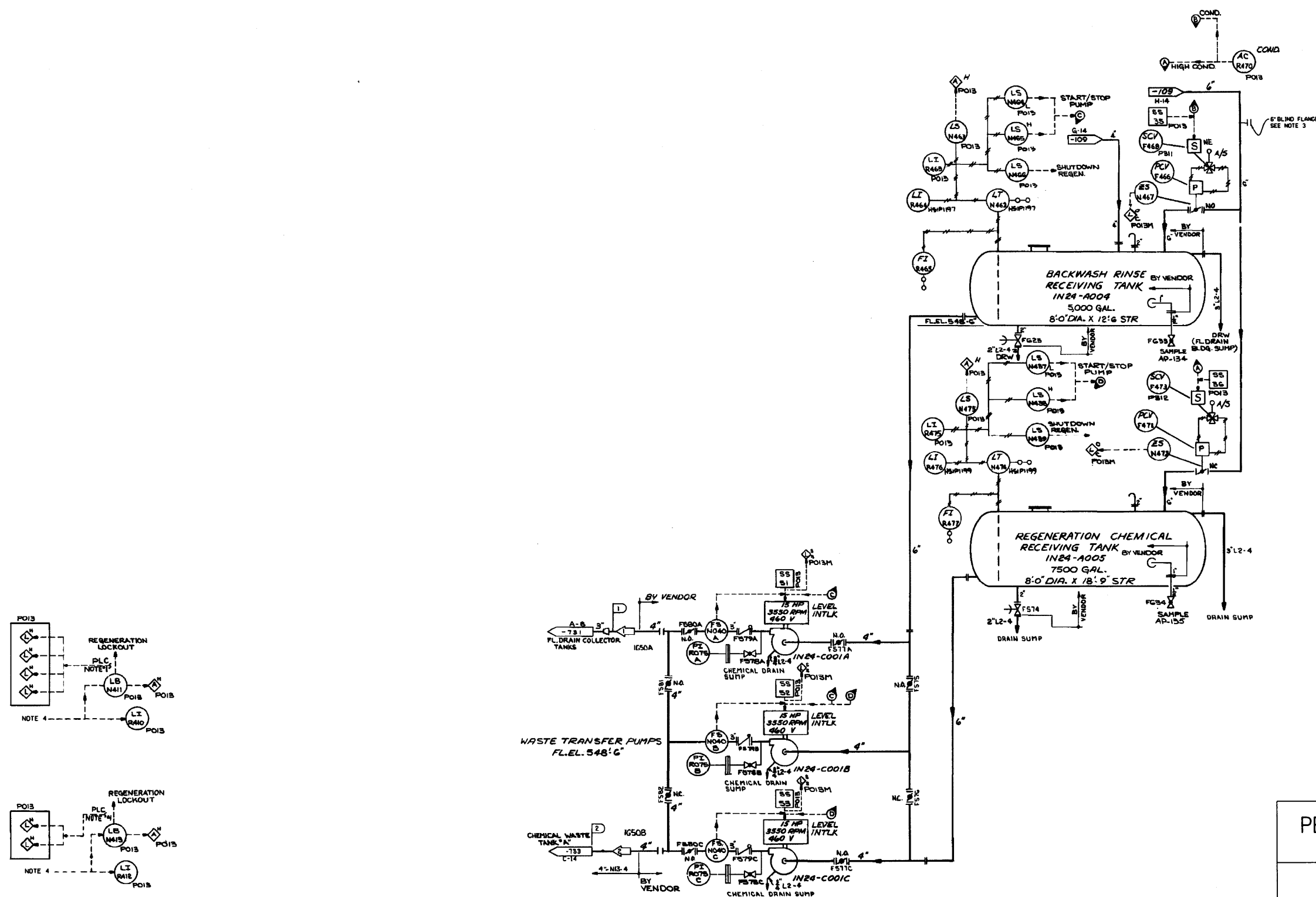
1. C-50 LIQUID WASTEWATER SYSTEM PLC IS INACTIVE.
2. PROCESS DATA SHOWN IN THE OPERATING DATA TABLE ON THIS SYSTEM DIAGRAM SHALL BE USED IN CONJUNCTION WITH THE DESIGN BASIS INFORMATION AND SHALL BE USED WITH CAUTION. THE DATA IN THE OPERATING DATA TABLE REPRESENTS TRENDS AND FLOWS PROVIDED ON THIS DRAWING. REPRESENTS THE MOST RECENT OPERATING CONDITION, AND/OR SYSTEM MODE OF OPERATION AND/OR LINEUP, TO DETERMINE THE REQUIRED VALUES FOR A SPECIFIC OPERATING CONFIGURATION, THE APPROPRIATE DESIGN DOCUMENTS MUST BE REVIEWED.
3. CONDUCTIVITY CELL PP-13424494 REMOVED FROM SYSTEM. CONDUCTIVITY REC PP-13424494 REMOVED IN COND. S10, DEMON. CONTROL PANEL, INSPIR003.
4. ANALOG SIGNALS FROM C-50 LIQUID WASTEWATER SYSTEM ARE N/A.

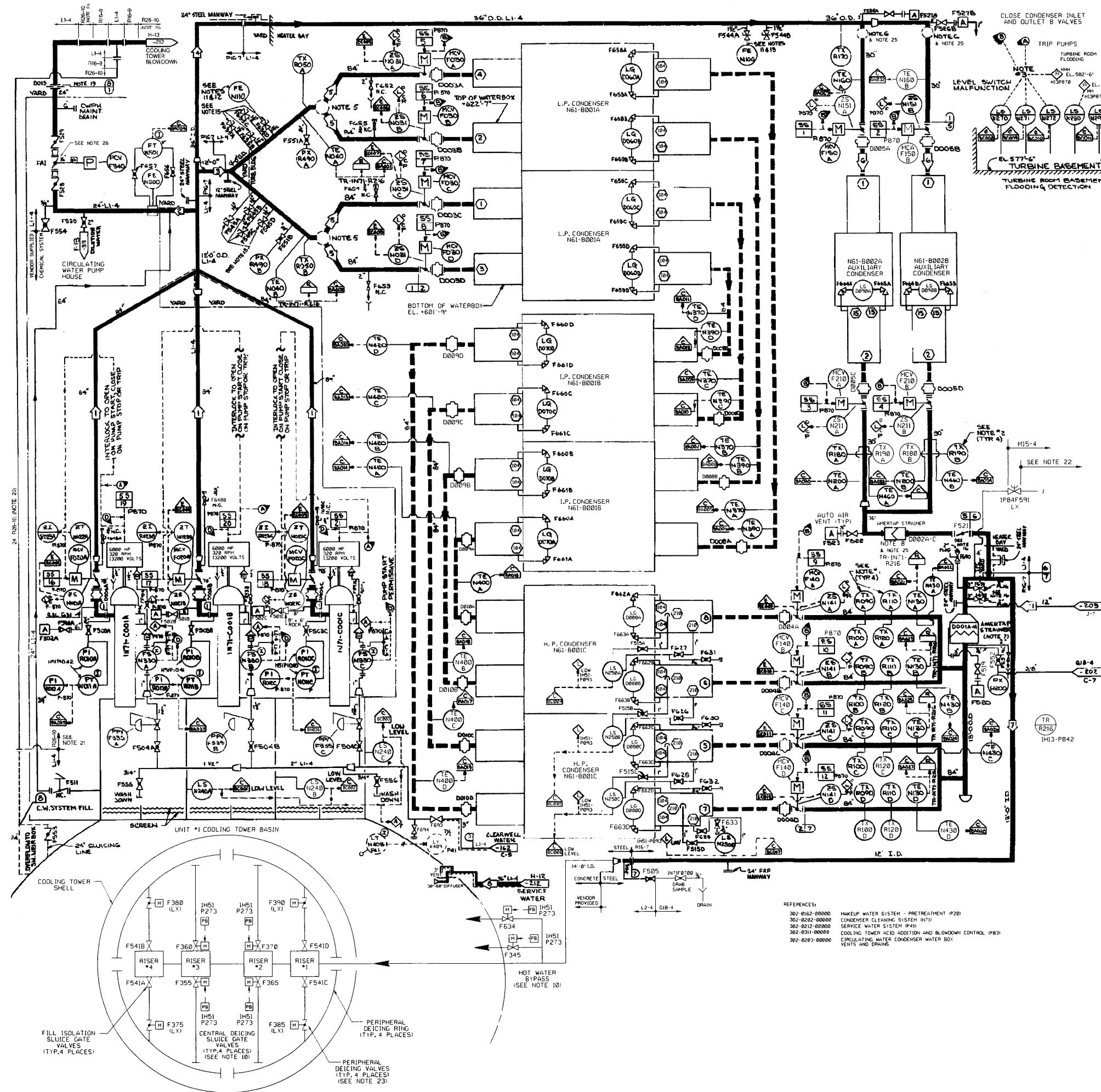
REFERENCE#	
302-0109-00000	CONDENSATE DEMINERALIZER SYSTEM N24
302-0731-00000	LRW - FLOOR DRAIN COLLECTOR TANKS AND WASTE COLLECTOR TANKS 050
302-0733-00000	LRW - CHEMICAL WASTE TANKS AND SPENT RESIN TRANSFER PUMPS 020

(REV. 19 10/2015)

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

CONDENSATE
DEMINERALIZER SYSTEM
FIGURE 10.1-6 (SHEET 4 OF 4)
(DWG. D-302-0110-00000)





OPERATING DATA * SEE NOTE 24

PSIG	GPM	°F	REMARKS
1	44	192.124	PUMP DISCHARGE WYE 1
2	56	18.300	WYE 1 (T.D.P.) 6.880 GPM-JAW
3	52	566.073	TEE 1 WYE 2
4	52	566.073	TEE 1 WYE 2
5	50	288.073	WYE 3 & 4 COND. INLET A & D
6	43	14.363	AUX. COND. INLET 2A & 2B
7	31	540.101	144\"/>

* OPERATING DATA IS BASED ON CASE 1 OF CALCULATION
N71-001 (3 PUMPS, NORMAL SYSTEM LINEUP).

DESIGN DATA

D	PSIG	°F	PSIG	°F	TIME	REMARKS
1	50	96	83	96	41X	UPSET AT PUMP SHUTOFF
2	52	128	78	128	41X	UPSET AT PUMP SHUTOFF
3	100	80	125	80	41X	CLEARWELL WATER FROM P20 SYSTEM
4	44	108	70	108	41X	UPSET AT PUMP SHUTOFF
5	23	108	23	108	41X	
6	35	128	35	128	41X	
7	5	96	5	96	41X	13988 GPM MAXI SEE NOTE 19

** DESIGN CONDITIONS APPLICABLE TO NORMAL SYSTEM OPERATION ARE BASED ON CASE 2 OF CALCULATION
N71-001 (3 PUMPS, ONE ISOLATED CONDENSER TRAIL)
*** BOUNDING (WORST CASE) DESIGN CONDITIONS ARE INDICATED IN THE UPSET DESIGN DATA COLUMN (3 PUMPS AT SHUT OFF HEAD CONDITIONS).

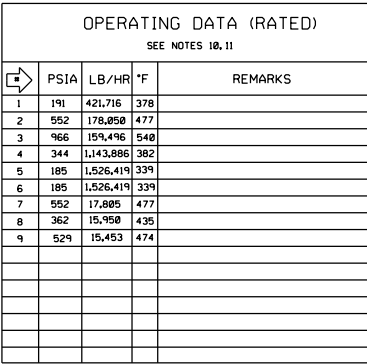
NOTES:

- FOUR TX'S LOCATED RADIALLY ON THE SAME PLANE.
- TWO TX'S LOCATED RADIALLY ON THE SAME PLANE.
- TWO OUT OF THREE.
- DIFFUSER PIPE.
- AMERTAP BALL INJECTION. SEE DWG. 302-0202-00000 10-51.
- AMERTAP BALL INJECTION. SEE DWG. 302-0202-00000 10-4 AND 10-6.
- AMERTAP BALL EXTRACTION. SEE DWG. 302-0202-00000 10-8 AND 10-9.
- AMERTAP BALL EXTRACTION. SEE DWG. 302-0202-00000 12-131.
- ALL INSTRUMENTS AND CONTROLS DESIGNATED P- TO BE MOUNTED ON PANEL H13P870, UNLESS OTHERWISE NOTED.
- EACH VALVE HAS A PAIR OF LIMIT SWITCHES FOR OPERATING STATUS LIGHTS ON PANEL H13P873. LIMIT SWITCHES ARE NUMBERED "HXXX+1", WHERE "XXX" IS THE NUMERICAL PORTION OF THE VALVE NUMBERS.
- THE PITOT TUBES, FOR USE WITH TEST MONITORS, ARE USED FOR FLOW TESTING IN BOTH UNITS AND ARE NOT PERMANENTLY INSTALLED. THEY HAVE PREFIX DN1-.
- TYPICAL AT VALVES F6635A, F6635B, F6635C, F6635D, F6635E, F6635F, F6635G, F6635H, F6635I, F6635J, F6635K, F6635L, F6635M, F6635N, F6635O, F6635P, F6635Q, F6635R, F6635S, F6635T, F6635U, F6635V, F6635W, F6635X, F6635Y, F6635Z, F6635AA, F6635AB, F6635AC, F6635AD, F6635AE, F6635AF, F6635AG, F6635AH, F6635AI, F6635AJ, F6635AK, F6635AL, F6635AM, F6635AN, F6635AO, F6635AP, F6635AQ, F6635AR, F6635AS, F6635AT, F6635AU, F6635AV, F6635AW, F6635AX, F6635AY, F6635AZ, F6635BA, F6635BB, F6635BC, F6635BD, F6635BE, F6635BF, F6635BG, F6635BH, F6635BI, F6635BJ, F6635BK, F6635BL, F6635BM, F6635BN, F6635BO, F6635BP, F6635BQ, F6635BR, F6635BS, F6635BT, F6635BU, F6635BV, F6635BW, F6635BX, F6635BY, F6635BZ, F6635CA, F6635CB, F6635CC, F6635CD, F6635CE, F6635CF, F6635CG, F6635CH, F6635CI, F6635CJ, F6635CK, F6635CL, F6635CM, F6635CN, F6635CO, F6635CP, F6635CQ, F6635CR, F6635CS, F6635CT, F6635CU, F6635CV, F6635CW, F6635CX, F6635CY, F6635CZ, F6635DA, F6635DB, F6635DC, F6635DD, F6635DE, F6635DF, F6635DG, F6635DH, F6635DI, F6635DJ, F6635DK, F6635DL, F6635DM, F6635DN, F6635DO, F6635DP, F6635DQ, F6635DR, F6635DS, F6635DT, F6635DU, F6635DV, F6635DW, F6635DX, F6635DY, F6635DZ, F6635EA, F6635EB, F6635EC, F6635ED, F6635EE, F6635EF, F6635EG, F6635EH, F6635EI, F6635EJ, F6635EK, F6635EL, F6635EM, F6635EN, F6635EO, F6635EP, F6635EQ, F6635ER, F6635ES, F6635ET, F6635EU, F6635EV, F6635EW, F6635EX, F6635EY, F6635EZ, F6635FA, F6635FB, F6635FC, F6635FD, F6635FE, F6635FF, F6635FG, F6635FH, F6635FI, F6635FJ, F6635FK, F6635FL, F6635FM, F6635FN, F6635FO, F6635FP, F6635FQ, F6635FR, F6635FS, F6635FT, F6635FU, F6635FV, F6635FW, F6635FX, F6635FY, F6635FZ, F6635GA, F6635GB, F6635GC, F6635GD, F6635GE, F6635GF, F6635GG, F6635GH, F6635GI, F6635GJ, F6635GK, F6635GL, F6635GM, F6635GN, F6635GO, F6635GP, F6635GQ, F6635GR, F6635GS, F6635GT, F6635GU, F6635GV, F6635GW, F6635GX, F6635GY, F6635GZ, F6635HA, F6635HB, F6635HC, F6635HD, F6635HE, F6635HF, F6635HG, F6635HH, F6635HI, F6635HJ, F6635HK, F6635HL, F6635HM, F6635HN, 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F6635LV, F6635LW, F6635LX, F6635LY, F6635LZ, F6635MA, F6635MB, F6635MC, F6635MD, F6635ME, F6635MF, F6635MG, F6635MH, F6635MI, F6635MJ, F6635MK, F6635ML, F6635MM, F6635MN, F6635MO, F6635MP, F6635MQ, F6635MR, F6635MS, F6635MT, F6635MU, F6635MV, F6635MW, F6635MX, F6635MY, F6635MZ, F6635NA, F6635NB, F6635NC, F6635ND, F6635NE, F6635NF, F6635NG, F6635NH, F6635NI, F6635NJ, F6635NK, F6635NL, F6635NM, F6635NN, F6635NO, F6635NP, F6635NQ, F6635NR, F6635NS, F6635NT, F6635NU, F6635NV, F6635NW, F6635NX, F6635NY, F6635NZ, F6635OA, F6635OB, F6635OC, F6635OD, F6635OE, F6635OF, F6635OG, F6635OH, F6635OI, F6635OJ, F6635OK, F6635OL, F6635OM, F6635ON, F6635OO, F6635OP, F6635OQ, F6635OR, F6635OS, F6635OT, F6635OU, F6635OV, F6635OW, F6635OX, F6635OY, F6635OZ, F6635PA, F6635PB, F6635PC, F6635PD, F6635PE, F6635PF, F6635PG, F6635PH, F6635PI, F6635PJ, F6635PK, F6635PL, F6635PM, F6635PN, F6635PO, F6635PP, F6635PQ, F6635PR, F6635PS, F6635PT, F6635PU, F6635PV, F6635PW, F6635PX, F6635PY, F6635PZ, F6635QA, F6635QB, F6635QC, F6635QD, F6635QE, F6635QF, F6635QG, F6635QH, F6635QI, F6635QJ, F6635QK, F6635QL, F6635QM, F6635QN, F6635QO, F6635QP, F6635QQ, F6635QR, F6635QS, F6635QT, F6635QU, F6635QV, F6635QW, F6635QX, F6635QY, F6635QZ, F6635RA, F6635RB, F6635RC, F6635RD, F6635RE, F6635RF, F6635RG, F6635RH, F6635RI, F6635RJ, F6635RK, F6635RL, F6635RM, F6635RN, F6635RO, F6635RP, F6635RQ, F6635RR, F6635RS, F6635RT, F6635RU, F6635RV, F6635RW, F6635RX, F6635RY, F6635RZ, F6635SA, F6635SB, F6635SC, F6635SD, F6635SE, F6635SF, F6635SG, F6635SH, F6635SI, F6635SJ, F6635SK, F6635SL, F6635SM, F6635SN, F6635SO, F6635SP, F6635SQ, F6635SR, F6635SS, F6635ST, F6635SU, F6635SV, F6635SW, F6635SX, F6635SY, F6635SZ, F6635TA, F6635TB, F6635TC, F6635TD, F6635TE, F6635TF, F6635TG, F6635TH, F6635TI, F6635TJ, F6635TK, F6635TL, F6635TM, F6635TN, F6635TO, F6635TP, F6635TQ, F6635TR, F6635TS, F6635TT, F6635TU, F6635TV, F6635TW, F6635TX, F6635TY, F6635TZ, F6635UA, F6635UB, F6635UC, F6635UD, F6635UE, F6635UF, F6635UG, F6635UH, F6635UI, F6635UJ, F6635UK, F6635UL, F6635UM, F6635UN, F6635UO, F6635UP, F6635UQ, F6635UR, F6635US, F6635UT, F6635UU, F6635UV, F6635UW, F6635UX, F6635UY, F6635UZ, F6635VA, F6635VB, F6635VC, F6635VD, F6635VE, F6635VF, F6635VG, F6635VH, F6635VI, F6635VJ, F6635VK, F6635VL, F6635VM, F6635VN, F6635VO, F6635VP, F6635VQ, F6635VR, F6635VS, F6635VT, F6635VU, F6635VV, F6635VW, F6635VX, F6635VY, F6635VZ, F6635WA, F6635WB, F6635WC, F6635WD, F6635WE, F6635WF, F6635WG, F6635WH, F6635WI, F6635WJ, F6635WK, F6635WL, F6635WM, F6635WN, F6635WO, F6635WP, F6635WQ, F6635WR, F6635WS, F6635WT, F6635WU, F6635WV, F6635WW, F6635WX, F6635WY, F6635WZ, F6635XA, F6635XB, F6635XC, F6635XD, F6635XE, F6635XF, F6635XG, F6635XH, F6635XI, F6635XJ, F6635XK, F6635XL, F6635XM, F6635XN, F6635XO, F6635XP, F6635XQ, F6635XR, F6635XS, F6635XT, F6635XU, F6635XV, F6635XW, F6635XX, F6635XY, F6635XZ, F6635YA, F6635YB, F6635YC, F6635YD, F6635YE, F6635YF, F6635YG, F6635YH, F6635YI, F6635YJ, F6635YK, F6635YL, F6635YM, F6635YN, F6635YO, F6635YP, F6635YQ, F6635YR, F6635YS, F6635YT, F6635YU, F6635YV, F6635YW, F6635YX, F6635YY, F6635YZ, F6635ZA, F6635ZB, F6635ZC, F6635ZD, F6635ZE, F6635ZF, F6635ZG, F6635ZH, F6635ZI, F6635ZJ, F6635ZK, F6635ZL, F6635ZM, F6635ZN, F6635ZO, F6635ZP, F6635ZQ, F6635ZR, F6635ZS, F6635ZT, F6635ZU, F6635ZV, F6635ZW, F6635ZX, F6635ZY, F6635ZZ.

(REV. 19 10/2015)

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

CIRCULATING
WATER SYSTEM
FIGURE 10.1-7
(DWG. D-302-0201-00000)



DESIGN DATA						
#	NORMAL		UPSET			REMARKS
	PSIG	°F	PSIG	°F	TIME	
1	1250	575	NA	NA	NA	
2	600	492	NA	NA	NA	
3	400	458	NA	NA	NA	
4	200	395	NA	NA	NA	
5	120	350	NA	NA	NA	
6	50	308	NA	NA	NA	
7	550	500	NA	NA	NA	

- NOTES:
1. VENT ORIFICES ON HEATER 5 AND 6 ARE INTERNAL.
2. FEEDWATER HEATERS SHOWN ON FOSTER-WHEELER DRAWINGS.
3. DC HEATER SHOWN ON CHICAGO HEATER DWG. D-3536.
4. MANUAL HEATER DRAINS ARE PIPO TO CONDENSER.
5. ALL PANEL AND RACKS ARE PREFIXED IH13, UNLESS OTHERWISE NOTED.
6. SIGNAL PROVIDED BY EHC TO INHIBIT VALVES OPENING DURING PREWARMING OPERATION.
7. ONE CONTROL SWITCH IS PROVIDED FOR ALL (4) MSR REHEATER STEAM FEED AND ASSOCIATED DRAIN SYSTEMS. THIS CONTROL FUNCTIONS TO PREVENT LOSS OF BLANKETING STEAM WHEN STEAM BLANKETING IS PENDING.
8. LOCAL PANELS AND RACKS P18B, P18I, P18J, P18Z, P15I, P16B, P16J, P19B, P18I, P277A AND P183S, CARRY PREFIX IH51.
9. FOR STEM SEALING DETAILS, SEE DWG. 302-0151-00000.
10. PROCESS DATA SHOWN IN THE OPERATING DATA TABLE ON THIS SYSTEM DIAGRAM MUST BE USED IN CONJUNCTION WITH THE DESIGN BASIS INFORMATION AND ANALYSIS. THESE DATA MUST BE USED WITH CAUTION. IN GENERAL, THE OPERATING DATA (PRESSURES, TEMPERATURES, AND FLOWS) PROVIDED ON THIS DRAWING, REPRESENTS THE MOST COMMON OPERATING CONDITION, AND SHOULD BE USED WITH CAUTION OF OPERATION AND/OR LINEUP, TO DETERMINE THE REQUIRED VALUES FOR A SPECIFIC OPERATING CONFIGURATION. THE APPROPRIATE DESIGN DOCUMENTS NEED TO BE REVIEWED.
11. OPERATING DATA IS TYPICALLY DERIVED FROM GE THERMAL KIT HEAT BALANCES. THE THERMAL KIT HEAT BALANCES ARE KEPT IN DESIGN INPUT RECORD (DIR) 237. OPERATING DATA SHOWN IS FOR RATED CONDITIONS APPLICABLE TO THE IMPLEMENTATION OF THE FOLLOWING PLANT CHANGES:
 - a). POWER UPGRADE TO 105% OF THE ORIGINAL DESIGN (REF: 1AF B1794).
 - b). PARTIAL ARC ADMISSION (REF: DCP 98-0058)
NOTE: PARTIAL ARC PARAMETER CHANGES (UP & DOWN) ARE SHOWN ONLY IF THEY ARE GREATER THAN 1% OF THE POWER RATED VALUES.
 - c). LOW PRESSURE TURBINE ROTOR REPLACEMENT (REF: ECP 04-0070).
12. REDUCER IS MADE OF ASTM A234 WP11 CHROME-MOLY MATERIAL WHICH IS COMPARABLE TO ASTM A234 W22. REFERENCE ECP 13-0591-001.
13. INLET REDUCER IS MADE OF ASTM A234 WP8 & OUTLET REDUCER IS MADE OF ASTM A234 WP11. BOTH OF WHICH ARE CHROME-MOLY MATERIAL COMPARABLE TO ASTM A234 W22. REFERENCE ECP 13-0591-001.

(REV. 21 10/2019)

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

HIGH PRESSURE HEATER DRAINS AND VENTS

FIGURE 10.1-8 (SHEET 1 OF 4)

(DWG. D-302-0111-00000)

REFERENCES:	
302-0012-00000	REHEAT STEAM SYSTEM N11
302-0041-00000	EXTRACTION STEAM SYSTEM N36
302-0112-00000	HIGH PRESSURE HEATER DRAINS AND VENTS 'B' SYSTEM N25
302-0113-00000	LOW PRESSURE HEATER DRAINS AND VENTS SYSTEM N26
302-0114-00000	HIGH PRESSURE HEATER DRAINS AND VENTS 'A' SYSTEM N25
302-0122-00000	MAIN, REHEAT, EXTRACTION, AND MISCELLANEOUS DRAINS SYSTEM N22
302-0183-00000	TURBINE PLANT SAMPLING SYSTEM P33
682-00091-00000	REACTOR - TURBINE GENERATOR TRIP DIAGRAM
302-0151-00000	CONDENSATE SEAL SYSTEM P12
302-0014-00000	REHEATER HEATING STEAM SYSTEM N11
302-0115-00000	HIGH PRESSURE HEATER DRAINS AND VENTS 'B' SYSTEM N25
302-0082-00000	FEEDWATER SYSTEM N27

OPERATING DATA (RATED)			
SEE NOTES 8, 9			
#	PSIA	LB/HR	'F
1	191	421,716	378
2	552	178,858	477
3	966	159,496	540
4	344	1,143,886	382
5	185	1,526,419	339
6	185	1,526,419	339
7	552	17,805	477
8	363	15,950	435
9	529	15,453	474

DESIGN DATA			
#	NORMAL	UPSET	REMARKS
PSIG	'F	PSIG	'F TIME
1	1250	575	NA NA NA
2	600	492	NA NA NA
3	400	450	NA NA NA
4	200	385	NA NA NA
5	120	350	NA NA NA
6	50	380	NA NA NA
7	550	500	NA NA NA

NOTES:

- VENT ORIFICES ON HEATERS 5 AND 6 ARE INTERNAL.
- FEEDWATER HEATERS SHOWN ON FOSTER-WHEELER DRAWINGS.
- DC HEATER SHOWN ON CHICAGO HEATER DWG. D-3536.
- MANUAL HEATER DRAINS ARE PIPED TO CONDENSER.
- ALL PANEL AND RACKS ARE PREFIXED IHI3, UNLESS OTHERWISE NOTED.
- LOCAL PANELS AND RACKS P1164, P1157, P1158, P1180, P179 P1019, P1022, P2778 AND P1026 CARRY PREFIX IHI3.
- FOR STEM SEALING DETAILS, SEE DWG. 302-0151-00000.

PROCESS DATA SHOWN IN THE OPERATING DATA TABLE ON THIS SYSTEM DIAGRAM SHALL BE USED IN CONJUNCTION WITH THE DESIGN BASIS INFORMATION AND SHALL BE USED WITH CAUTION. IN GENERAL, THE OPERATING DATA (PRESSURES, TEMPERATURES, AND FLOWS) PROVIDED ON THIS DRAWING, REPRESENTS THE MOST COMMON OPERATING CONDITION, AND/OR SYSTEM MODE OF OPERATION AND/OR LINEUP, TO DETERMINE THE REQUIRED VALUES FOR A SPECIFIC OPERATING CONFIGURATION, THE APPROPRIATE DESIGN DOCUMENTS NEED TO BE REVIEWED.

OPERATING DATA IS TYPICALLY DERIVED FROM GE THERMAL KIT HEAT BALANCES. THE THERMAL KIT HEAT BALANCES ARE KEPT IN DESIGN INPUT RECORD (DIR) 237. OPERATING DATA SHOWN IS FOR RATED CONDITIONS APPLICABLE TO THE IMPLEMENTATION OF THE FOLLOWING PLANT CHANGES:

- POWER UPGRADE TO 105% OF THE ORIGINAL DESIGN (REF: TAF 81794).
- PARTIAL ARC ADMISSION (REF: DCP 98-0050) NOTE: PARTIAL ARC PARAMETER CHANGES UP & DOWN ARE SHOWN ONLY IF THEY ARE GREATER THAN 1% OF THE POWER UPGRADE VALUES.
- LOW PRESSURE TURBINE ROTOR REPLACEMENT (REF: ECP 04-0070).

REDUCER IS MADE OF ASTM A234 WP11 CHROME-MOLY MATERIAL WHICH IS COMPARABLE TO ASTM A234 WP22 REFERENCE ECP 13-0591-001.

INLET REDUCER IS MADE OF ASTM A234 WP8 & OUTLET REDUCER IS MADE OF ASTM A234 WP11, BOTH OF WHICH ARE CHROME-MOLY MATERIAL COMPARABLE TO ASTM A234 WP22, REFERENCE ECP 13-0591-001.

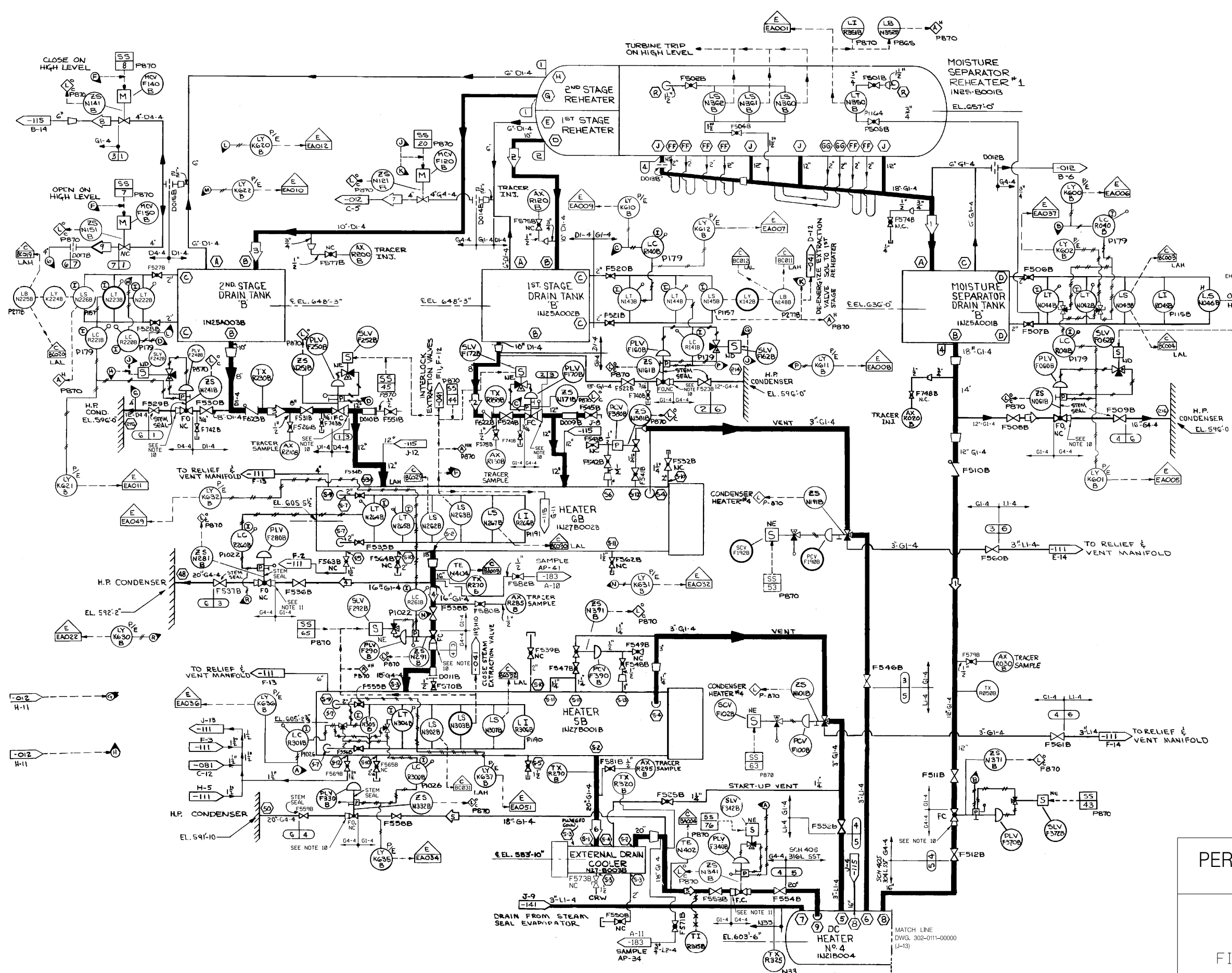
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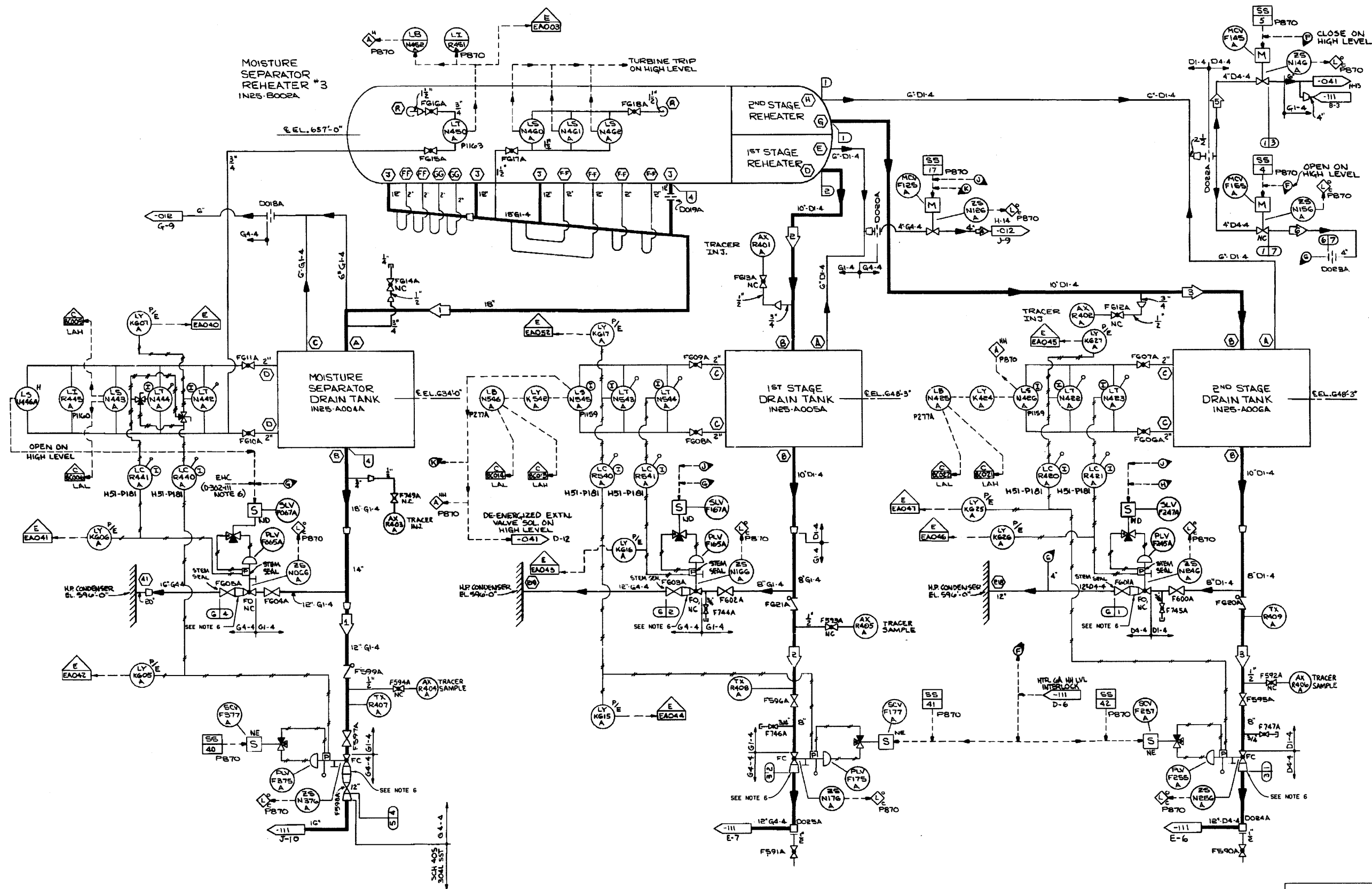
- 302-0012-00000 REHEAT STEAM SYSTEM N11
- 302-0111-00000 HIGH PRESSURE HEATER DRAINS AND VENTS 'A' SYSTEM N25
- 302-0115-00000 HIGH PRESSURE HEATER DRAINS AND VENTS 'B' SYSTEM N25
- 302-0141-00000 STEAM SEAL SYSTEM N33
- 302-0182-00000 TURBINE PLANT SAMPLING SYSTEM P33
- 302-0183-00000 TURBINE PLANT SAMPLING SYSTEM P33
- 302-0009-00000 REACTOR - TURBINE GENERATOR TRIP DIAGRAM
- 302-0151-00000 CONDENSATE SEAL SYSTEM P12
- 302-0081-00000 FEEDWATER SYSTEM N27
- 302-0041-00000 EXTRACTION STEAM SYSTEM N36

(REV. 20 10/2017)

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

HIGH PRESSURE HEATER DRAINS AND VENTS
FIGURE 10.1-8 (SHEET 2 OF 4)
(DWG. D-302-0112-00000)





OPERATING DATA (RATED)				
SEE NOTES 4, 5				
#	PSIA	LB/HR	°F	REMARKS
1	191.4	421,716	378	
2	552	178,858	477	
3	966	159,496	548	
4	552	178,858	477	
5	362	15,958	435	
6	529	15,453	474	

DESIGN DATA				
#	NORMAL	UPSET	TIME	REMARKS
1	1250	575	NA	NA
2	580	492	NA	NA
3	480	450	NA	NA
4	200	385	NA	NA
5	120	350	NA	NA
6	50	380	NA	NA
7	350	580	NA	NA

302-0111-00000, NOTE 7

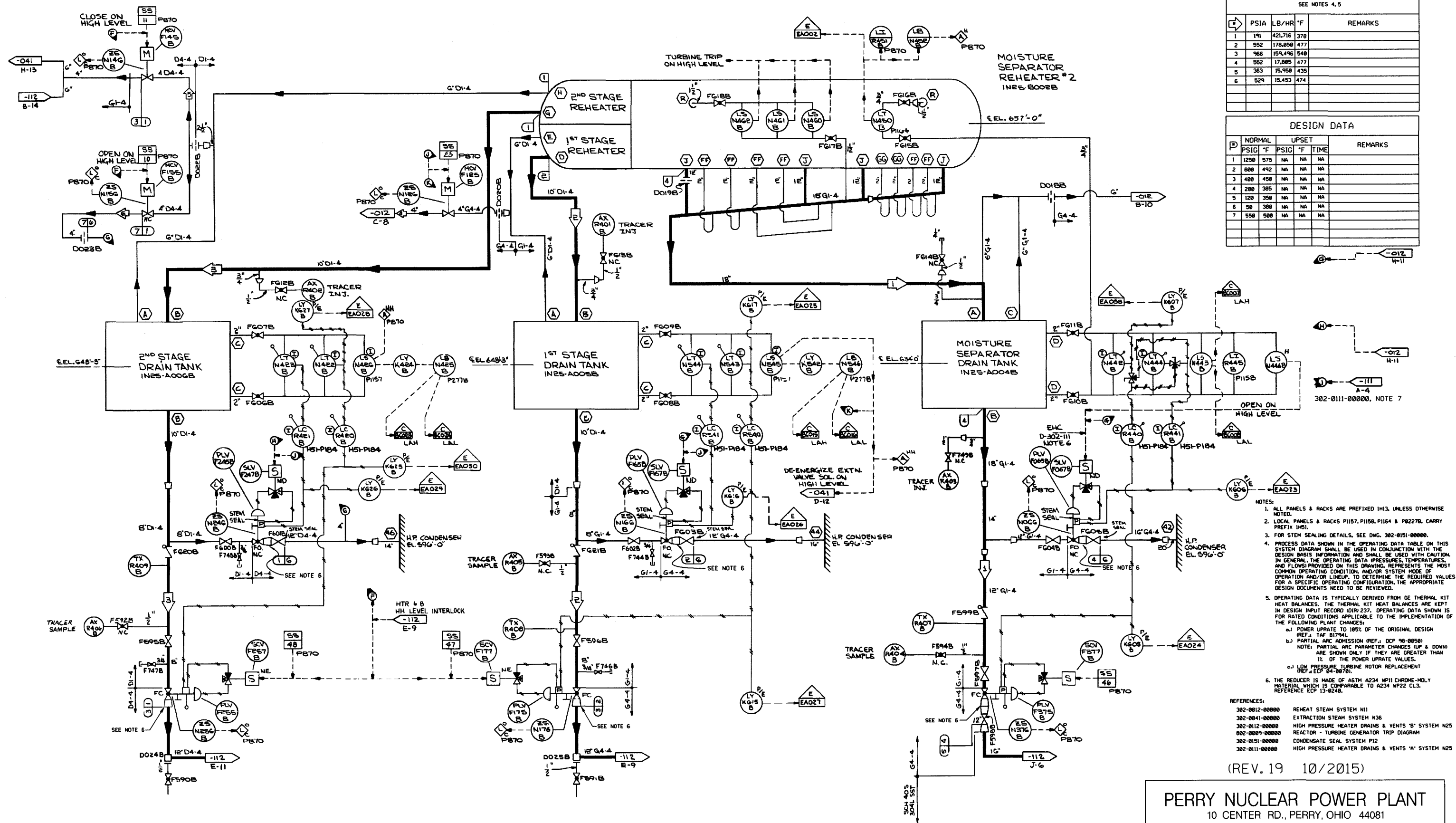
- NOTES:
- ALL PANELS & RACKS ARE PREFIXED I113, UNLESS OTHERWISE NOTED.
 - LOCAL PANELS & RACKS P1159, P1168, P1163 & P277A, PREFIX I151.
 - FOR STEM SEALING DETAILS, SEE DWG. 302-0151-00000.
 - PROCESS DATA SHOWN IN THE OPERATING DATA TABLE ON THIS SYSTEM DIAGRAM SHALL BE USED IN CONJUNCTION WITH THE DESIGN BASIS INFORMATION AND SHALL BE USED WITH CAUTION. IN GENERAL, THE OPERATING DATA (PRESSURES, TEMPERATURES, AND FLOWS) PROVIDED ON THIS DRAWING, REPRESENTS THE MOST COMMON OPERATING CONDITION AND/OR SYSTEM MODE OF OPERATION AND/OR LINEUP. TO DETERMINE THE REQUIRED VALUES FOR A SPECIFIC OPERATING CONFIGURATION, THE APPROPRIATE DESIGN DOCUMENTS NEED TO BE REVIEWED.
 - OPERATING DATA IS TYPICALLY DERIVED FROM GE THERMAL KIT HEAT BALANCES. THE THERMAL KIT HEAT BALANCES ARE KEPT IN DESIGN INPUT RECORD (DIR) 237. OPERATING DATA SHOWN IS FOR RATED CONDITIONS APPLICABLE TO THE IMPLEMENTATION OF THE FOLLOWING PLANT CHANGES:
 - POWER UPGRADE TO 105% OF THE ORIGINAL DESIGN (REF. 1: F1744).
 - PARTIAL ARC ADMISSION (REF. 1: DCP 98-0050) NOTE: PARTIAL ARC PARAMETER CHANGES (UP & DOWN) ARE SHOWN ONLY IF THEY ARE GREATER THAN 1% OF THE POWER UPGRADE VALUES.
 - LOW PRESSURE TURBINE ROTOR REPLACEMENT (REF. ECP 04-0078).
 - THE REDUCER IS MADE OF ASTM A234 WP11 CHROME-MOLY MATERIAL WHICH IS COMPARABLE TO A234 WP22 CL3, REFERENCE ECP 13-8248.

- REFERENCES:
- 302-0012-00000 REHEAT STEAM SYSTEM I11
 - 302-0041-00000 EXTRACTION STEAM SYSTEM I06
 - 302-0111-00000 HIGH PRESSURE HEATER DRAINS & VENTS 'A' SYSTEM I25
 - 002-0009-00000 REACTOR - TURBINE GENERATOR TRIP DIAGRAM
 - 302-0151-00000 CONDENSATE SEAL SYSTEM I12

(REV. 19 10/2015)

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

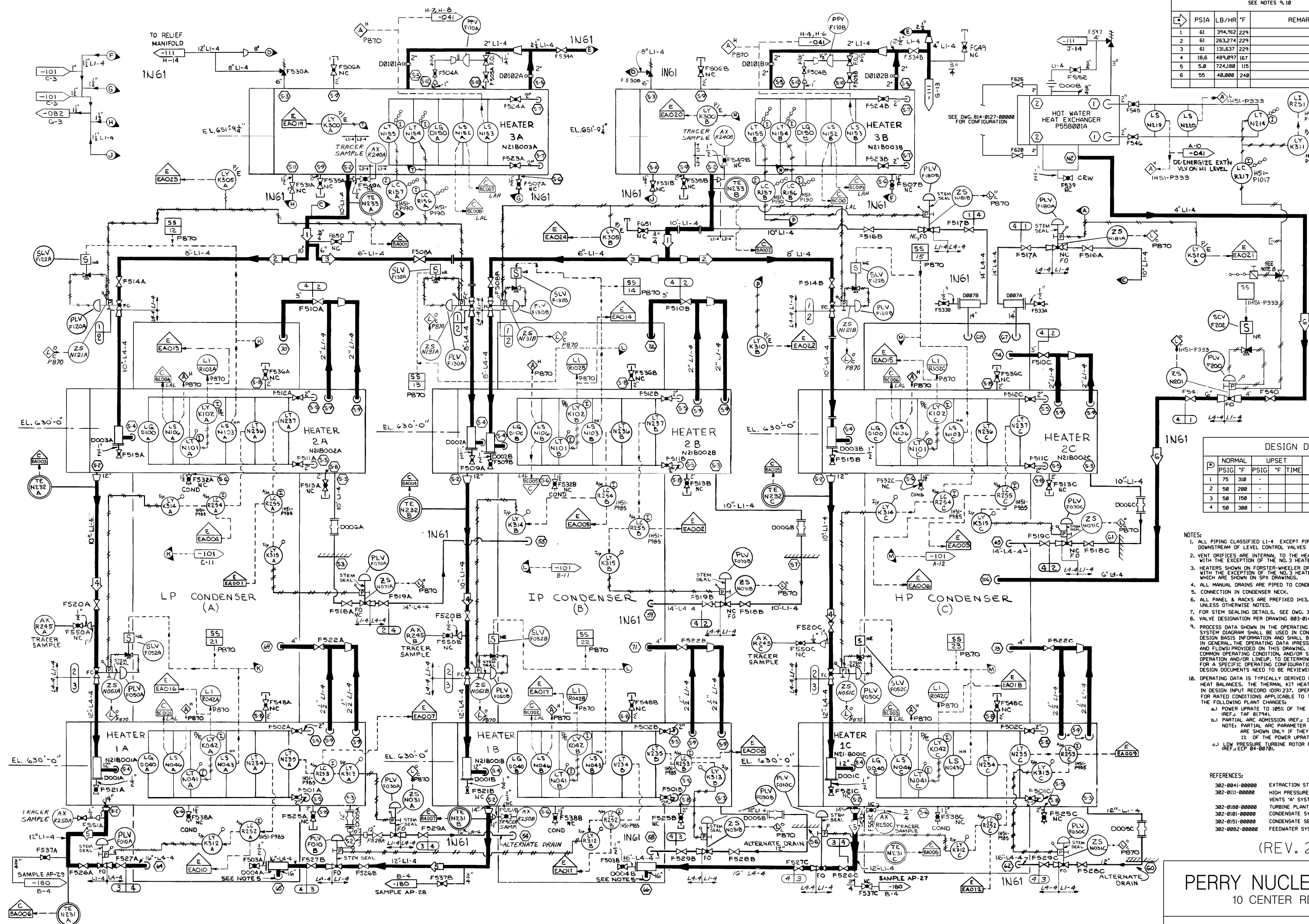
HIGH PRESSURE HEATER
DRAINS AND VENTS
FIGURE 10.1-8 (SHEET 3 OF 4)
(DWG. D-302-0114-00000)



(REV. 19 10/2015)

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

**HIGH PRESSURE HEATER
DRAINS AND VENTS**
FIGURE 10.1-8 (SHEET 4 OF 4)
(DWG. D-302-0115-00000)



OPERATING DATA (RATED)
SEE NOTES 9, 10

	PSIA	LB/HR	°F	REMARKS
1	61	394,912	229	
2	61	263,274	229	
3	61	131,637	229	
4	18.6	489,897	167	
5	5.0	724,188	115	
6	55	40,000	240	

DESIGN DATA

	NORMAL	UPSET	REMARKS
1	PSIG °F	PSIG °F TIME	
2	75 310	-	
3	50 200	-	
4	50 150	-	
5	50 300	-	

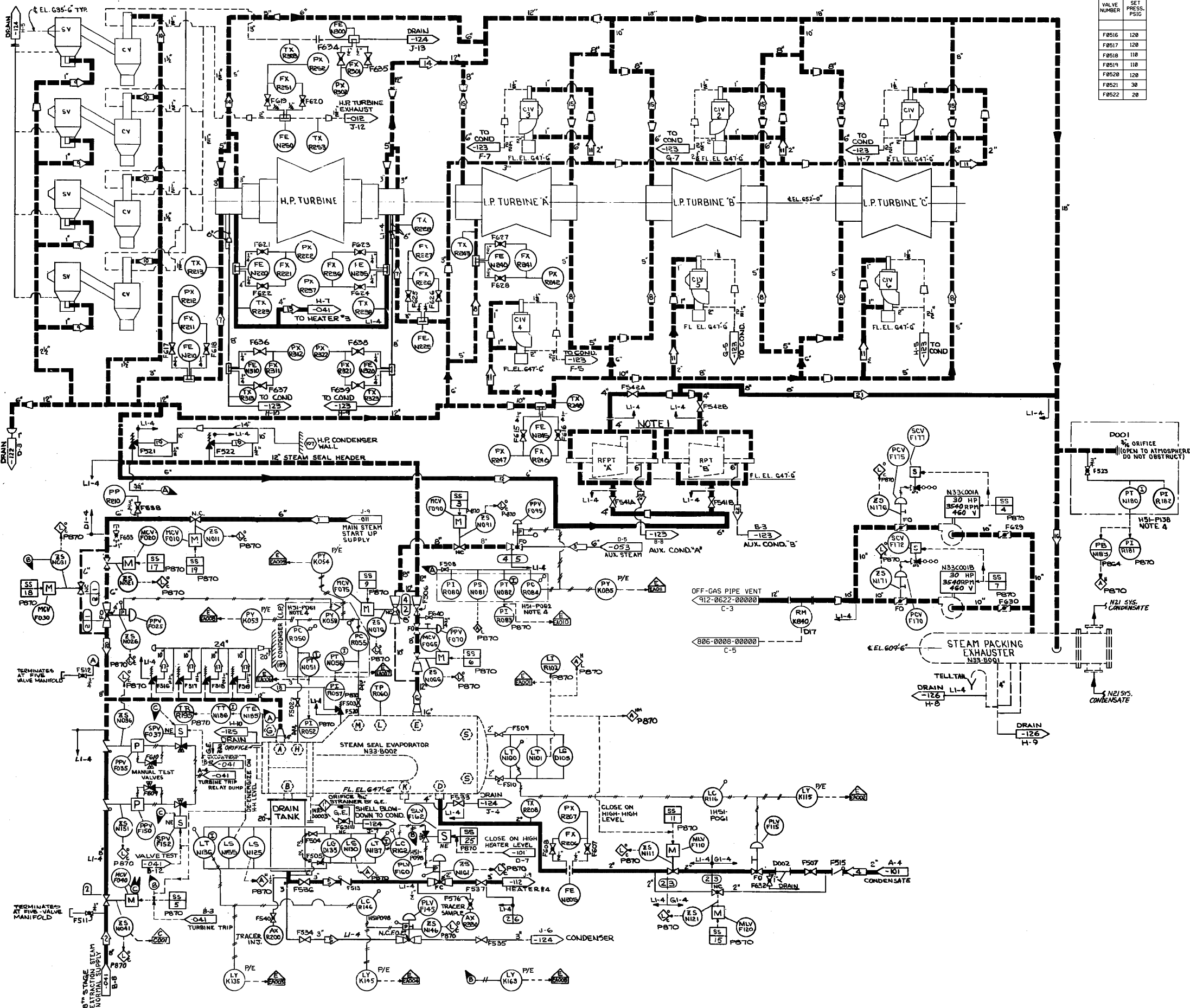
- NOTES:
- ALL PIPING CLASSIFIED LI-4 EXCEPT PIPING DOWNSTREAM OF LEVEL CONTROL VALVES WHICH IS LI-4.
 - VENT ORIFICES ARE INTERNAL TO THE HEATERS WITH THE EXCEPTION OF THE NO. 3 HEATERS.
 - HEATERS SHOWN ON FORSTER-WHEELER DRAWINGS WITH THE EXCEPTION OF THE NO. 3 HEATERS WHICH ARE SHOWN ON SPY DRAWINGS.
 - ALL MANUAL DRAINS ARE PIPED TO CONDENSER.
 - CONNECTION IN CONDENSER NECK.
 - ALL PANEL & RACKS ARE PREFIXED IHI3.
 - FOR STEM SEALING DETAILS, SEE DWG. 302-0131-00000.
 - VALVE DESIGNATION PER DRAWING 803-0140-00055.
 - PROCESS DATA SHOWN IN THE OPERATING DATA TABLE ON THIS SYSTEM DIAGRAM SHALL BE USED IN CONJUNCTION WITH THE DESIGN BASIS INFORMATION AND SHALL BE USED WITH CAUTION. IN GENERAL, THE OPERATING DATA (PRESSURES, TEMPERATURES, AND FLOWS) PROVIDED ON THIS DRAWING REPRESENTS THE MOST COMMON OPERATING CONDITION, AND/OR SYSTEM MODE OF OPERATION AND/OR LINEUP, TO DETERMINE THE REQUIRED VALUES FOR A SPECIFIC OPERATING CONFIGURATION, THE APPROPRIATE DESIGN DOCUMENTS NEED TO BE REVIEWED.
 - OPERATING DATA IS TYPICALLY DERIVED FROM GE THERMAL KIT HEAT BALANCES. THE THERMAL KIT HEAT BALANCES ARE KEPT IN DESIGN INPUT RECORD (DIR) 237. OPERATING DATA SHOWN IS FOR RATED CONDITIONS APPLICABLE TO THE IMPLEMENTATION OF THE FOLLOWING PLANT CHANGES:
 - POWER UPGRADE TO 185% OF THE ORIGINAL DESIGN (REF. TAF 81794).
 - PARTIAL ARC ADMISSION (REF. J. DCP 98-0050) NOTE: PARTIAL ARC PARAMETER CHANGES UP & DOWN ARE SHOWN ONLY IF THEY ARE GREATER THAN 1% OF THE POWER UPGRADE VALUES.
 - LOW PRESSURE TURBINE ROTOR REPLACEMENT (REF. ECP 84-0070).

- REFERENCES:
- 302-0041-00000 EXTRACTION STEAM SYSTEM N36
 - 302-0111-00000 HIGH PRESSURE HEATER DRAINS & VENTS
 - 302-0180-00000 VENTS "A" SYSTEM N25
 - 302-0180-00000 TURBINE PLANT SAMPLING SYSTEM P33
 - 302-0181-00000 CONDENSATE SYSTEM N21
 - 302-0181-00000 CONDENSATE SEAL SYSTEM P12
 - 302-0082-00000 FEEDWATER SYSTEM N27

(REV. 21 10/2019)

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

LOW PRESSURE
HEATER DRAINS AND VENTS
FIGURE 10.1-9
(DWG. D-302-0113-00000)



RELIEF VALVE SET PRESS. VALVE NUMBER	SET PRESS. PSIG
F0516	120
F0517	120
F0518	110
F0519	110
F0520	120
F0521	30
F0522	20

OPERATING DATA				
SEE NOTES 8, 9				
PSIG	LB/HR	°F	REMARKS	
1	950	30,100	540	START UP
2	95	25,400	420	50,700 MAX.
3	90	25,000	331	45,000 MAX.
4	60-400	25,000	216	45,000 MAX.
5	67	130	313	START-UP (MAX.)
	33	65	278	START-UP (NORM.)
	82	110	326	FULL-LOAD (MAX.)
	83	60	327	FULL-LOAD (NORM.)
6	10-60	25,000	300	45,000 MAX.
7	4	1170	260	
8	4	2940	260	
9	4	290	260	
10	4	50	260	
11	4	75	260	
12	4	810	260	MAX. 1620 LB/HR
13	100	8,150	380	39,300 MAX.
14	5" H ₂ O VAC	550	200	PLUS 190 LB/HR AIR
15	5" H ₂ O VAC	1110	200	PLUS 390 LB/HR AIR
16	10" H ₂ O VAC	7750	200	PLUS 2720 LB/HR AIR
17	65	185,000	355	RELIEF VALVE
18	10	190,000		380 GPM RELIEF VALVE SP. GR. 1.1
19	10	52,000	270	RELIEF VALVE
20	50	30,100		
21	5" H ₂ O VAC	355	200	PLUS 130 LB/HR AIR MAX. 710 LB/HR STIM. & 260 LB/HR AIR
22	5" H ₂ O VAC	747	260	1490 LB/HR MAX.

DESIGN DATA					
ID	NORMAL		UPSET		REMARKS
	PSIG	°F	PSIG	°F	
1	1250	575			
2	150	450			
3	600	320			
4	25	450			
5	195	385			
6	120	350			

- NOTES:
- OUTLINE OF RPPT (PURCHASE CONNECTIONS) ON G.E. DWG. 5004190C.
 - STEAM SEAL EVAPORATOR SHOWN ON G.E. DWG. 1160411.
 - STEAM PACKING EXHAUSTER SHOWN ON G.E. DWG. 1610476L.
 - INSTRUMENT INCLUDED WITHIN BOUNDARY ARE LOCATED ON THE PANEL INDICATED.
 - ALL PANEL NUMBERS ARE PREFIXED BY 1H13, UNLESS OTHERWISE NOTED.
 - FORWARD-REVERSE TUBE REPRESENTED BY SYMBOLS. ROOT VALVES BY G.E.T.
 - G.E.T. DOES NOT PROVIDE TEST THERMOWELLS IN THEIR PORTION OF THE STEAM SEAL PIPING. STRIP COUPLES ARE TO BE SUPPLIED BY CEI FOR THE FOLLOWING TEMPERATURE TEST POINTS: R213, R228, R243, R248, R253, AND R303.
 - PROCESS DATA SHOWN IN THE OPERATING DATA TABLE ON THIS SYSTEM DIAGRAM SHALL BE USED IN CONJUNCTION WITH THE DESIGN BASIS INFORMATION AND SHALL BE USED WITH CAUTION. IN GENERAL, THE OPERATING DATA (PRESSURES, TEMPERATURES, AND FLOWS) PROVIDED ON THIS DRAWING, REPRESENTS THE MOST COMMON OPERATING CONDITION, AND/OR SYSTEM MODE OF OPERATION AND/OR LINEUP, TO DETERMINE THE REQUIRED VALUES FOR A SPECIFIC OPERATING CONFIGURATION, THE APPROPRIATE DESIGN DOCUMENTS NEED TO BE REVIEWED.
 - OPERATING DATA IS TYPICALLY DERIVED FROM GE THERMAL KIT HEAT BALANCES. THE THERMAL KIT HEAT BALANCES ARE KEPT IN DESIGN INPUT RECORD (DIR) 237. OPERATING DATA SHOWN IS FOR RATED CONDITIONS APPLICABLE TO THE IMPLEMENTATION OF THE FOLLOWING PLANT CHANGES:
 - POWER UPGRADE TO 105% OF THE ORIGINAL DESIGN (REF. TAF 81794L).
 - PARTIAL ARC ADMISSION (REF. DCP 98-0050) NOTE: PARTIAL ARC PARAMETER CHANGES (UP & DOWN) ARE SHOWN ONLY IF THEY ARE GREATER THAN 1% OF THE POWER UPGRADE VALUES.
 - LOW PRESSURE TURBINE ROTOR REPLACEMENT (REF. ECP 84-00780).

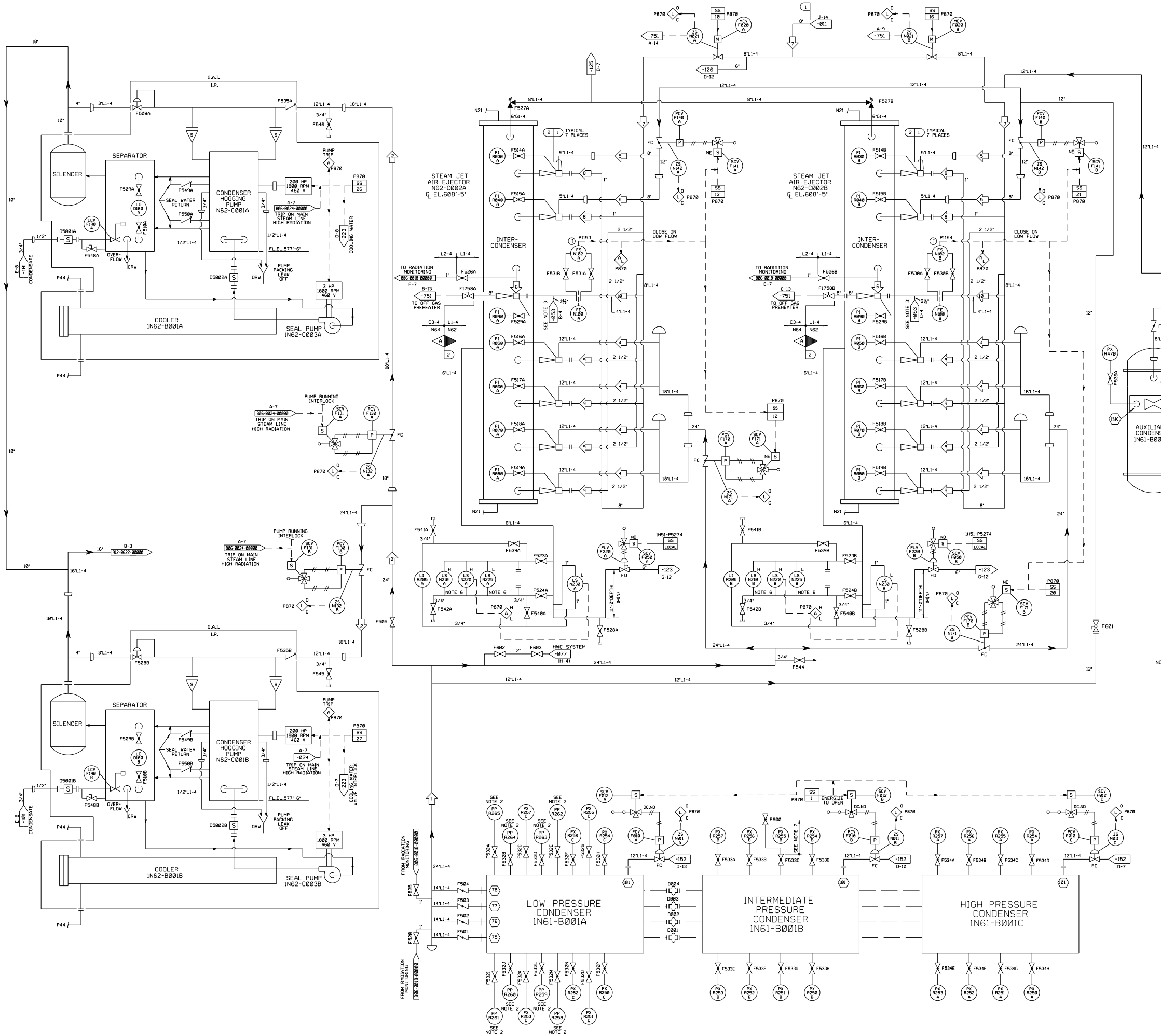
- REFERENCES:
- | | |
|-----------------|--|
| 302-0011-000000 | MAIN STEAM SYSTEM N11 |
| 302-0041-000000 | EXTRACTOR STEAM SYSTEM N36 |
| 302-0101-000000 | CONDENSATE SYSTEM N21 |
| 302-0112-000000 | HIGH PRESSURE HEATER DRAINS AND VENTS "B" SYSTEM N25 |
| 302-0122-000000 | MAIN, REHEAT, EXTRACTION AND MISCELLANEOUS DRAINS SYSTEM N22 |
| 302-0123-000000 | MAIN, REHEAT, EXTRACTION AND MISCELLANEOUS DRAINS SYSTEM N22 |
| 302-0124-000000 | MAIN, REHEAT, EXTRACTION AND MISCELLANEOUS DRAINS SYSTEM N22 |
| 302-0125-000000 | MAIN, REHEAT, EXTRACTION AND MISCELLANEOUS DRAINS SYSTEM N22 |
| 302-0126-000000 | OFF-GAS BUILDING EXHAUST SYSTEM N03 |
| 302-0127-000000 | PLANT RADIATION MONITORING SYSTEM (D7) |
| 12503148 | ELEMENTARY DIAGRAM TRIP AND MONITORING SYSTEM (G.E.) |
| 834E202 | DIAGRAM OF STEAM SEAL SYSTEM (G.E.) |
| 302-0128-000000 | MAIN, REHEAT, EXTRACTION AND MISCELLANEOUS DRAINS SYSTEM N22 |
| 302-0053-000000 | AUXILIARY STEAM SYSTEM P61 |
| 302-0012-000000 | REHEAT STEAM SYSTEM N11 |

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PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

STEAM SEAL SYSTEM

FIGURE 10.1-10
(DWG. D-302-0141-00000)



OPERATING DATA				
SEE NOTES 8, 9				
#	IN, HGA	°F	#/HR	REMARKS
1	2	100	3100	AIR AND VAPOR
2	3.0	75	2500	ACFM
3	2	100	260	AIR AND VAPOR
4	2	100	775	AIR AND VAPOR
5	2	100	130	AIR AND VAPOR
6	8	228	654	AIR AND VAPOR
7	140	353	24,377	STEAM
8	140	353	408	STEAM
9	140	353	3509	STEAM
10	140	353	9525	STEAM

DESIGN DATA				
#	NORMAL	UPSET	TIME	REMARKS
1	PSIG	°F	PSIG	°F
2	150	353	150	353
3	15	353		
4				
5				
6				

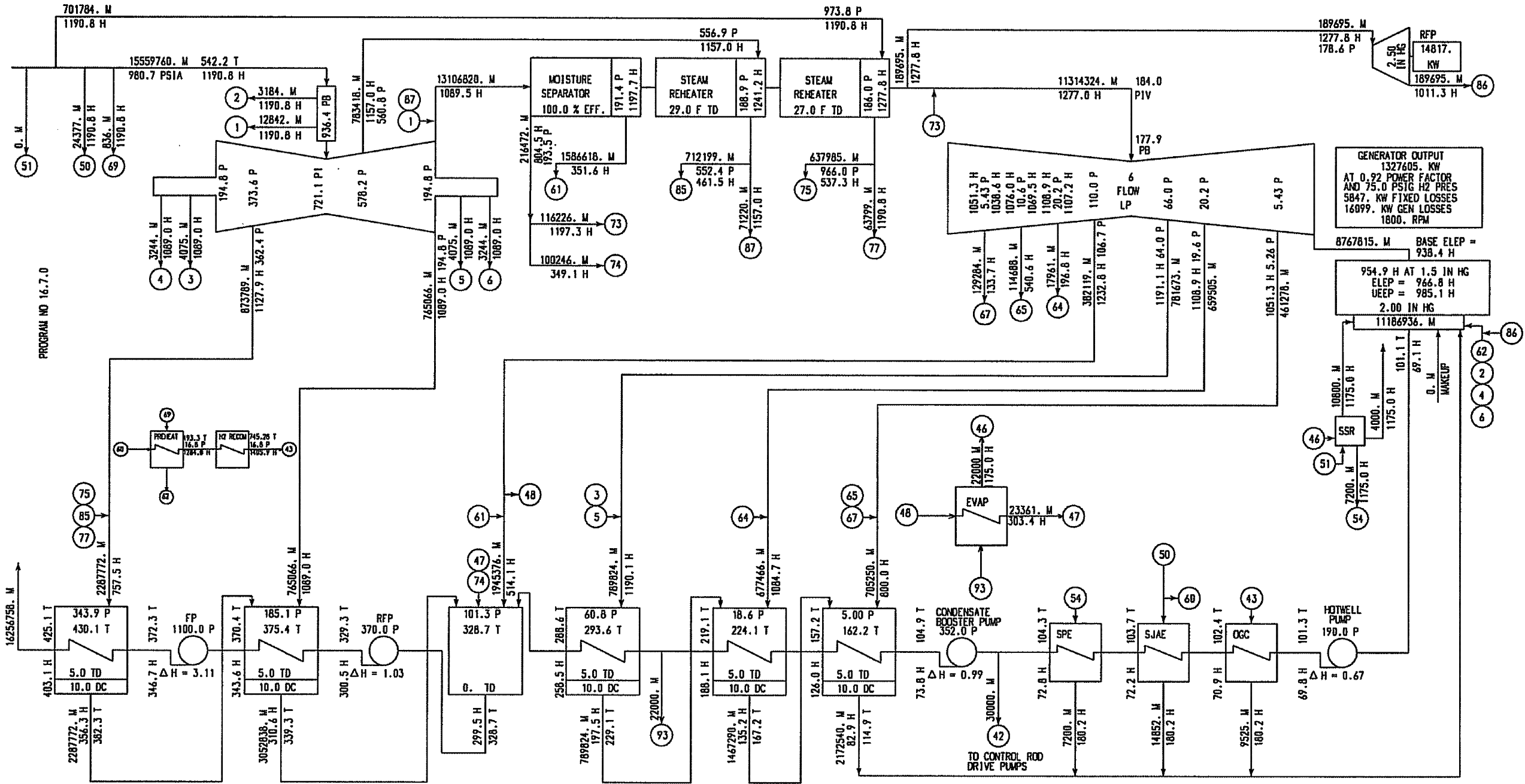
- REFERENCES:
- 302-0011-00000 MAIN STEAM SYSTEM, N11
 - 302-0053-00000 AUXILIARY STEAM, P61
 - 302-0101-00000 CONDENSATE SYSTEM, N21
 - 302-0123-00000 M.R.E. AND MISCELLANEOUS DRAINS SYSTEM, N22
 - 302-0125-00000 M.R.E. AND MISCELLANEOUS DRAINS SYSTEM, N22
 - 302-0126-00000 M.R.E. AND MISCELLANEOUS DRAINS SYSTEM, N22
 - 302-0152-00000 CONDENSATE SEAL SYSTEM, P12
 - 302-0222-00000 TURBINE BLOC, CLOSED COOLING SYSTEM, P44
 - 302-0751-00000 OFF-GAS LOW TEMPERATURE SYSTEM, N64
 - 006-0010-00000 OFF-GAS PRETREATMENT RADIATION MONITORS AND SAMPLERS K-612
 - 006-0024-00000 PLANT RADIATION MONITORING SYSTEM
 - 912-0622-00000 OFF-GAS BUILDING EXHAUST AND WATER TREATMENT BUILDING VENTILATION SYSTEMS, M36 & M37
 - 001E555 PERFORMANCE TEST PIPING, HOODS A AND B
 - 003E401 PERFORMANCE TEST PIPING, HOOD C
- NOTES:
- ALL PANELS AND RACKS CARRY PREFIX IH13, UNLESS OTHERWISE NOTED.
 - BASKET TIPS SUPPLIED BY G.E.T. NOT TO BE CONNECTED FOR ASME TEST.
 - TEST CONNECTION PERMANENTLY PIPED.
 - NO IMPACT TESTS ARE REQUIRED FOR PIPING (C3-4) BETWEEN SJAE AND RECOMBINERS.
 - THE SYMBOL <DESIGNATES THOSE NON-SAFETY AREAS OF THE SYSTEM WHERE THE AUGMENTED QUALITY ASSURANCE PROGRAM REQUIREMENTS DEFINED IN SP-45 APPLY.
 - LEVEL SWITCHES N210A & B AND N225A & B ARE ABANDONED IN PLACE.
 - TUBING UPSTREAM OF 1N62F0533C IS LINEAR LOW DENSITY POLYETHYLENE. 1N62F0600 IS A NON-CALIBRATED VALVED FLOW METER. PRESSURE TEST POINT LOCATION PX-R0255B IS BEING UTILIZED AS THE TRACER GAS 'TEST SHOT' INJECTION POINT FOR CONDENSER IN-LEAKAGE TESTING ACTIVITIES.
 - PROCESS DATA SHOWN IN THE OPERATING DATA TABLE ON THIS SYSTEM DIAGRAM SHALL BE USED IN CONJUNCTION WITH THE DESIGN BASIS INFORMATION AND SHALL BE USED WITH CAUTION. IN GENERAL, THE OPERATING DATA (PRESSURES, TEMPERATURES, AND FLOWS) PROVIDED ON THIS DRAWING, REPRESENTS THE MOST COMMON OPERATING CONDITION, AND/OR SYSTEM MODE OF OPERATION AND/OR LINEUP TO DETERMINE THE REQUIRED VALUES FOR A SPECIFIC OPERATING CONFIGURATION, THE APPROPRIATE DESIGN DOCUMENTS NEED TO BE REVIEWED.
 - OPERATING DATA IS TYPICALLY DERIVED FROM GE THERMAL KIT HEAT BALANCES. THE THERMAL KIT HEAT BALANCES ARE KEPT IN DESIGN INPUT RECORD (DIR) 237. OPERATING DATA SHOWN IS FOR RATED CONDITIONS APPLICABLE TO THE IMPLEMENTATION OF THE FOLLOWING PLANT CHANGES:
 - a.) POWER UPGRADE TO 105% OF THE ORIGINAL DESIGN (REF: TAF 81794).
 - b.) PARTIAL ARC ADMISSION (REF: DCP 98-0050). NOTE: PARTIAL ARC PARAMETER CHANGES UP & DOWN ARE SHOWN ONLY IF THEY ARE GREATER THAN 1% OF THE POWER UPGRADE VALUES.
 - c.) LOW PRESSURE TURBINE ROTOR REPLACEMENT (REF: ECP 04-0070).

(REV. 20 10/2017)

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

CONDENSER AIR
REMOVAL SYSTEM
FIGURE 10.1-11
(DWG. D-302-0131-00000)

THE VALUE OF GENERATOR OUTPUT SHOWN ON THIS HEAT BALANCE IS AFTER ALL POWER FOR EXCITATION AND OTHER TURBINE-GENERATOR AUXILIARIES HAS BEEN DEDUCTED



VALVE BEST POINT
NET HEAT RATE = $\frac{15554973. (1190.8 - 403.1) + 701784. (1190.8 - 403.1) + 30000. (1190.8 - 72.8)}{1327605.} = 9670 \frac{\text{BTU}}{\text{KW-HR}}$

FENOC - Perry Unit 1
Turbine No. 170X655
LP Monoblock Upgrade
New 43" LSB Design
Rated Thermal Power
(NSSS = 3762.5 MWth)

LEGEND - CALCULATIONS BASED
ON 1967 ASME STEAM TABLES
M - FLOW-LB/HR
P - PRESSURE-PSIA
H - ENTHALPY-BTU/LB
T - TEMPERATURE-F DEGREES

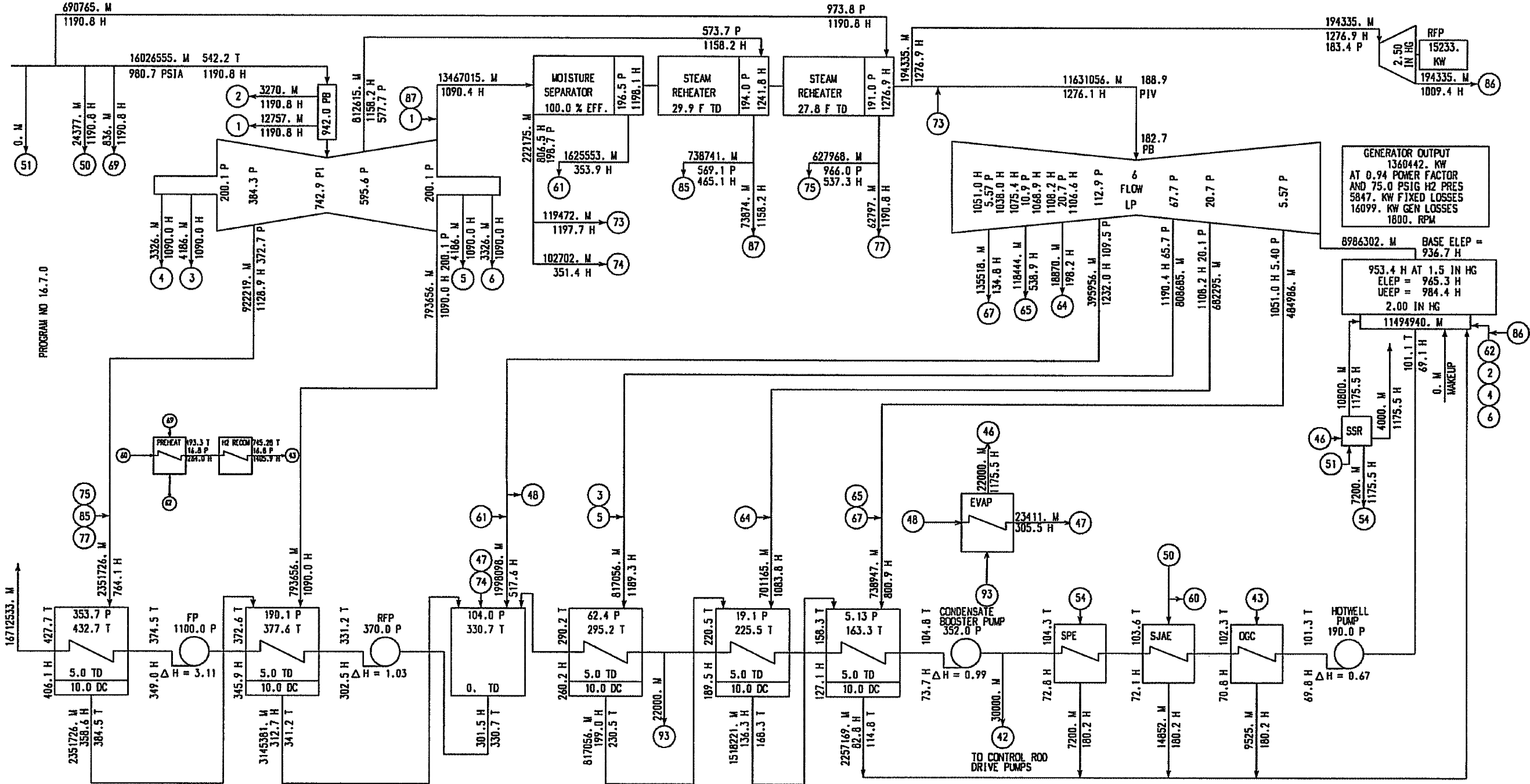
1327605. KW 2.00 IN HG ABS 0. PCT MU
TC&F 43.0 IN LSB 1800 RPM
980.7 PSIA 1190.8 BTU / LB TWO STAGE REHEAT
GEN- 1446700. KVA 0.90 PF L10 75.0 PSIG H2 PRES

(Rev. 18 10/13)

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TURBINE AND EXTRACTION ARRANGEMENT IS SCHEMATIC ONLY
CALCULATED DATA - NOT GUARANTEED

THE VALUE OF GENERATOR OUTPUT SHOWN ON THIS HEAT BALANCE IS AFTER ALL POWER FOR EXCITATION AND OTHER TURBINE-GENERATOR AUXILIARIES HAS BEEN DEDUCTED



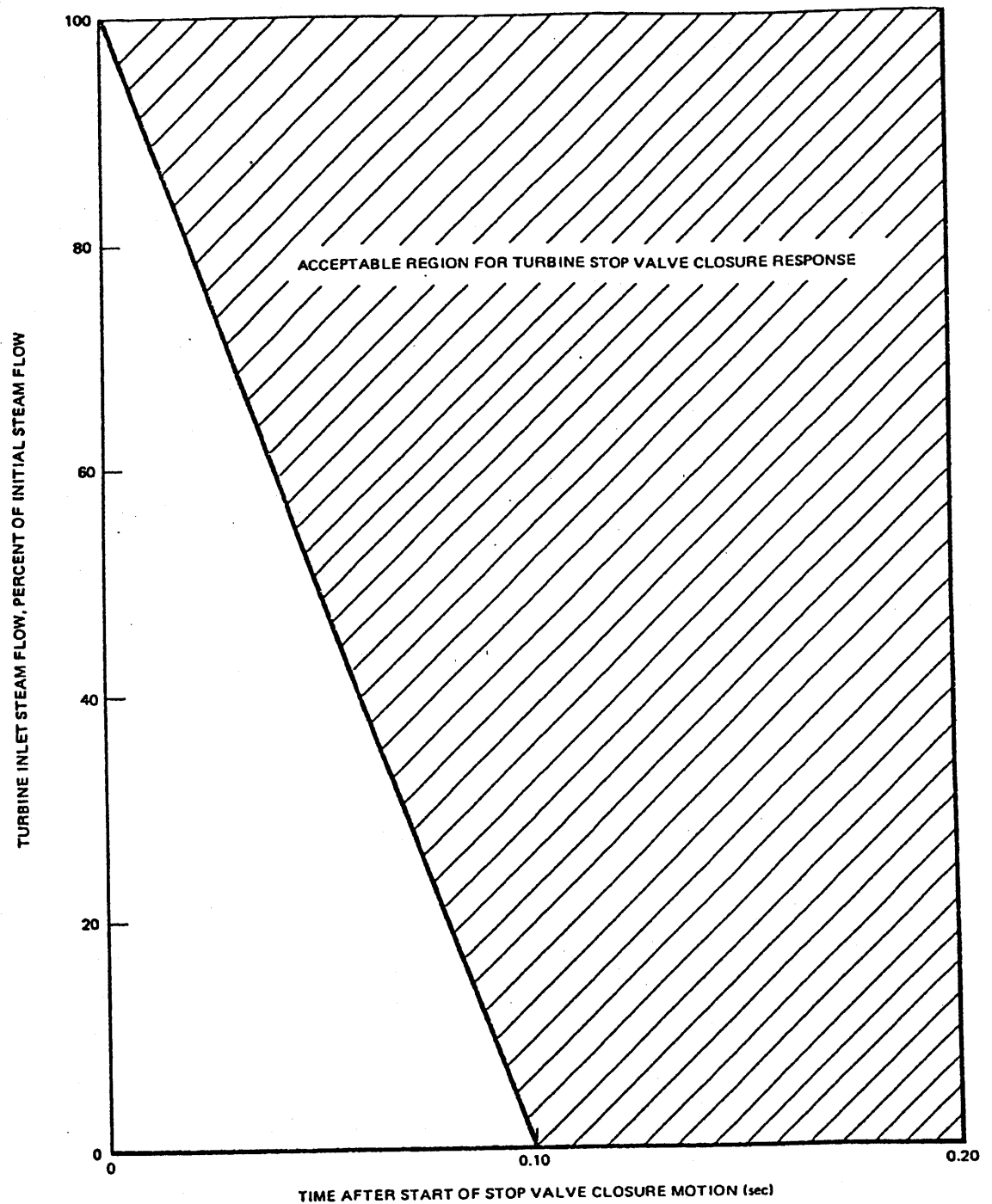
VALVE BEST POINT
NET HEAT RATE = $\frac{16021768. (1190.8 - 406.1) + 690765. (1190.8 - 406.1) + 30000. (1190.8 - 72.8)}{1360442.} = 9665 \frac{\text{BTU}}{\text{KW-HR}}$

FENOC - Perry Unit 1
Turbine No. 170X655
LP Monoblock Upgrade
New 43" LSB Design
VVO Flow Condition
(3% Flow Margin Assumption)

LEGEND - CALCULATIONS BASED
ON 1967 ASME STEAM TABLES
M - FLOW-LB/HR
P - PRESSURE-PSIA
H - ENTHALPY-BTU/LB
T - TEMPERATURE-F DEGREES

1327605. KW 2.00 IN HG ABS 0. PCT MU
TC4F 43.0 IN LSB 1800 RPM
980.7 PSIA 1190.8 BTU / LB TWO STAGE REHEAT
GEN- 1446700. KVA 0.90 PF L10 75.0 PSIG H2 PRES

(Rev. 18 10/13)



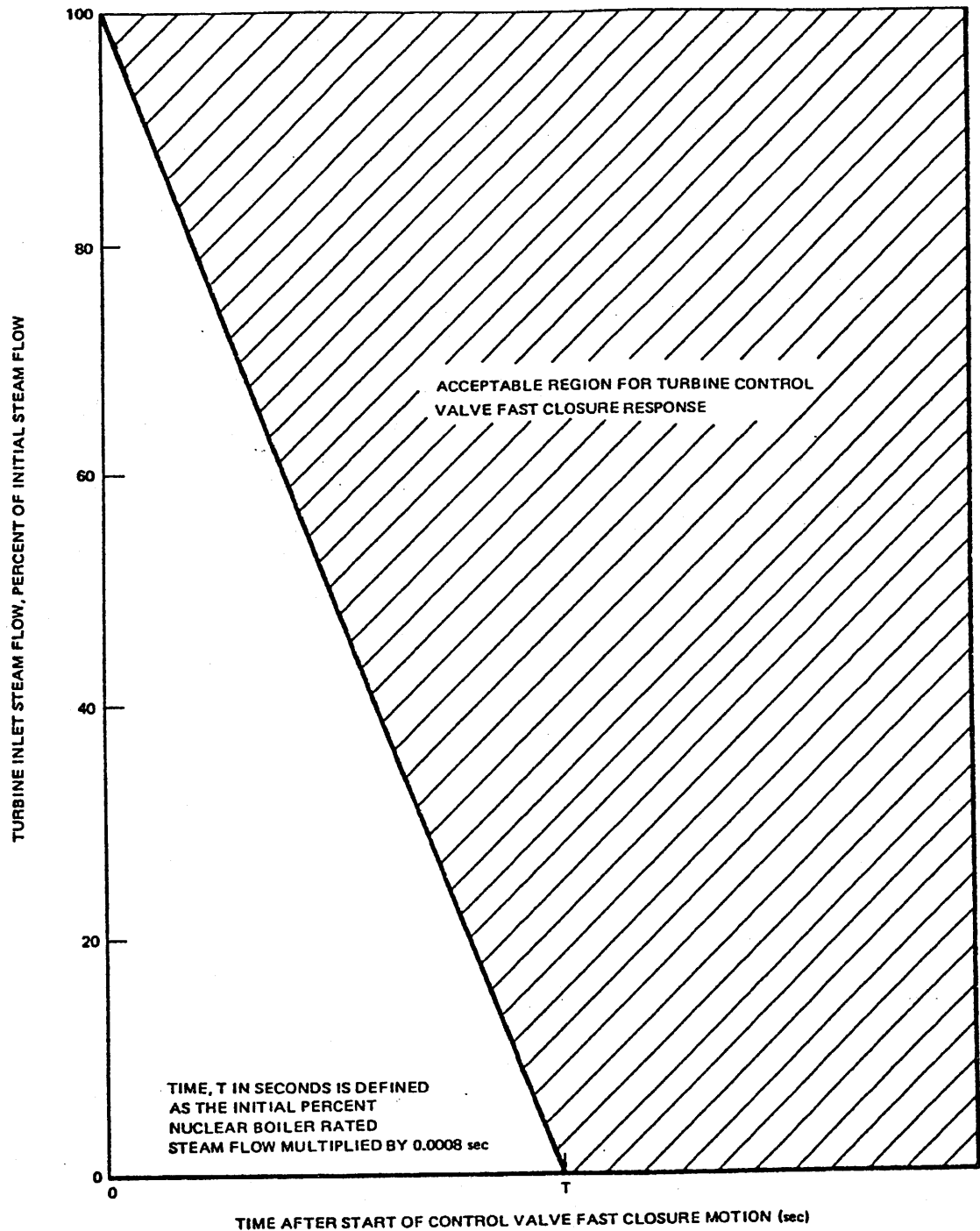
(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

Turbine Stop Valve
Closure Characteristics

Figure 10.2-1



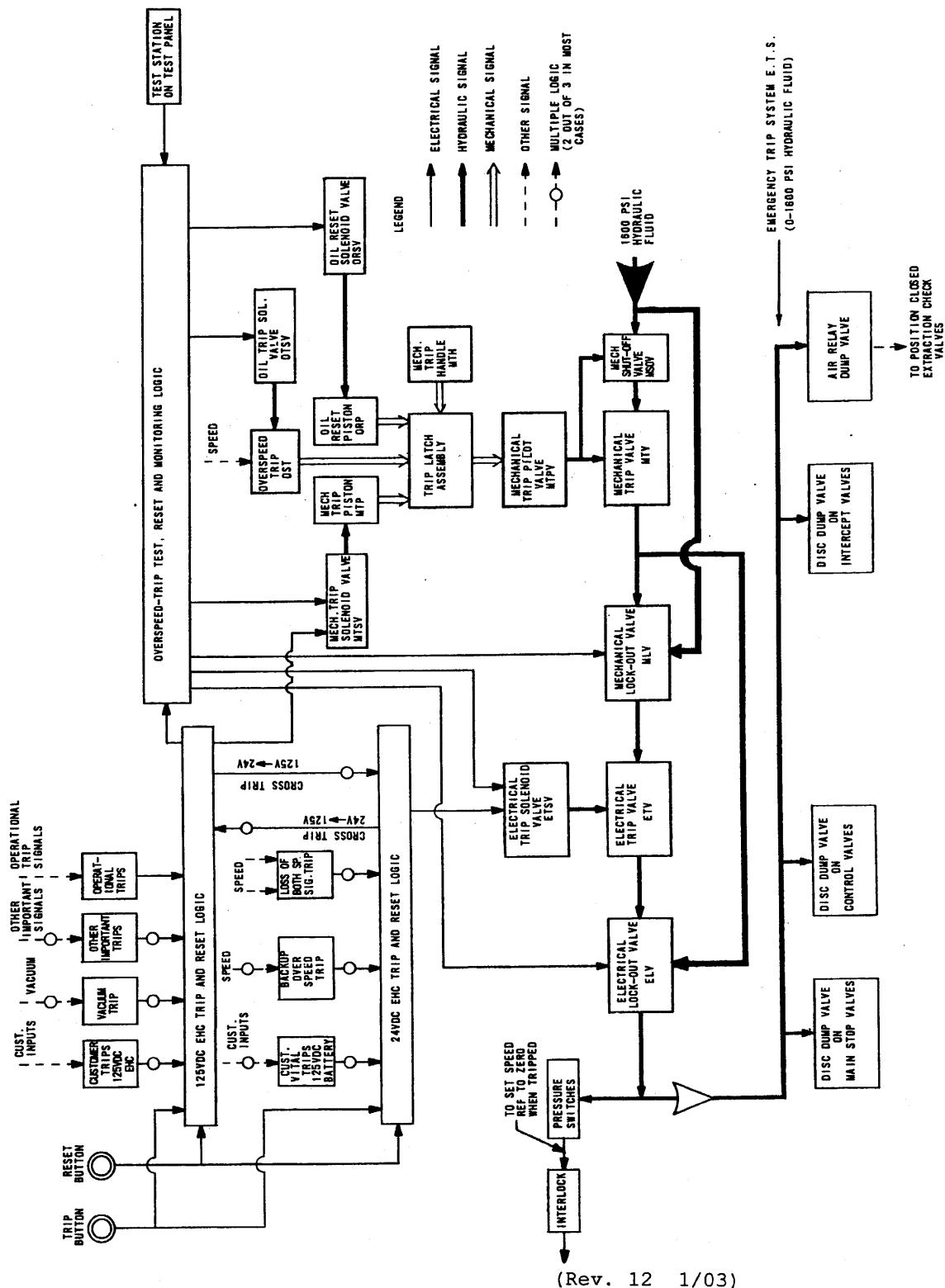
(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

Turbine Control Valve Fast
Closure Characteristics

Figure 10.2-2



(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

Turbine Protection System Block Diagram

Figure 10.2-3

RELIEF VALVE SET PRESSURE	
VALVE N°	P.S.I.G.
RUPTURE DISC	3675
F503A AND F503B	2450
F512A & F512B	120
F516	120

NOTES:

1. MAXIMUM FLOW DURING GENERATOR FILLING OPERATION IS 175 SCFH. THE FLOW DURING NORMAL OPERATION IS 800 SCFH PER DAY MAXIMUM (8.42 SCFH).
2. ALL PANELS CARRY PREFIX 1H51- UNLESS OTHERWISE NOTED.
3. CAPACITY OF EACH STORAGE TANK 8000 SCFH OF HYDROGEN AT 2300 PSIG (3:1 RATIO).
4. PPV-F503 IS AN EXCESSIVE FLOW CHECK VALVE DESIGNED TO STOP FLOW WHEN IT EXCEEDS 87 SCFH (3120 SCFH).
5. HYDROGEN PIPING WILL NOT BE ROUTED THROUGH AREAS CONTAINING SAFETY-RELATED EQUIPMENT.
6. PROCESS DATA SHOWN IN THE OPERATING DATA TABLE ON THIS SYSTEM DIAGRAM SHALL BE USED IN CONJUNCTION WITH THE DESIGN BASIS INFORMATION AND SHALL BE USED WITH CAUTION. IN GENERAL, THE OPERATING DATA (PRESSURES, TEMPERATURES, AND FLOWS) PROVIDED ON THIS DRAWING REPRESENTS THE MOST COMMON OPERATING CONDITION AND/OR SYSTEM MODE OF OPERATION AND/OR LINEUP. TO DETERMINE THE REQUIRED VALUES FOR A SPECIFIC OPERATING CONFIGURATION, THE APPROPRIATE DESIGN DOCUMENTS NEED TO BE REVIEWED.

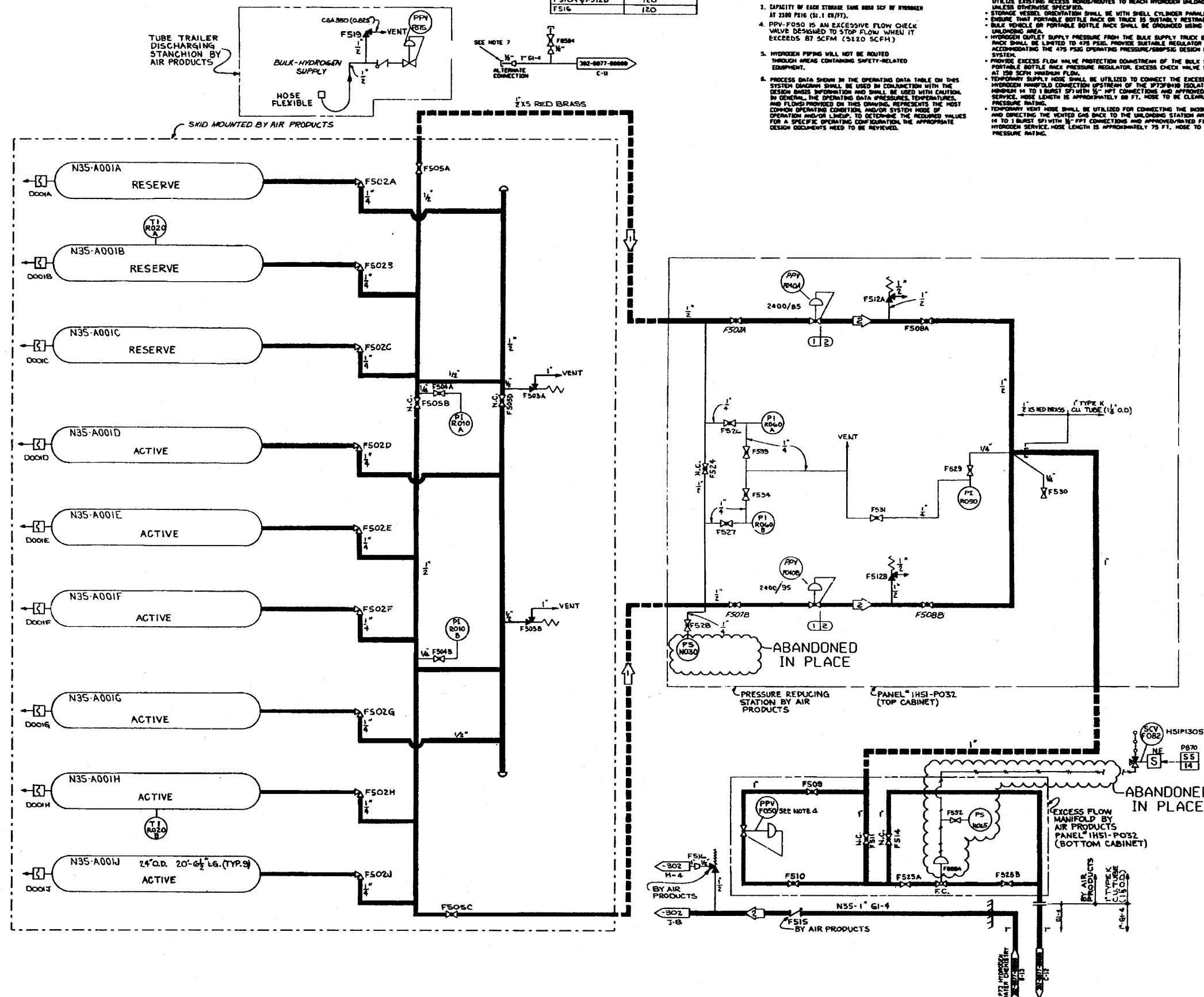
7. ALTERNATE HYDROGEN CONNECTION BY OTHERS REQUIREMENTS ARE AS FOLLOWS:

- STORAGE VESSEL SHALL BE LIMITED TO 62.42 SCFH.
- STORAGE PRESSURE SHALL BE LIMITED TO 2300 PSIG.
- HYDROGEN VESSEL CAPACITY SHALL BE LIMITED TO 2,387 SCFH.
- STORAGE LOCATION SHALL BE 50 FT. NORTH OF TEMPORARY TIE-IN CONNECTION POINT AT HEATER BAY SURROUNDING STRUCTURE. CURRENT HYDROGEN SEPARATION DISTANCES SHALL BE MAINTAINED.
- UTILIZE EXISTING ACCESS ROADS/ROUTES TO REACH HYDROGEN UNLOADING AREA, UNLESS OTHERWISE SPECIFIED.
- STORAGE VESSEL ORIENTATION SHALL BE WITH SHOCK CYLINDER PARALLEL WITH N. TURBINE BLDG. WALL.
- ENSURE THAT PORTABLE BOTTLE RACK OR TRUCK IS SUITABLY RESTRAINED TO AVOID DAMAGING WINDS.
- BULK VEHICLE OR PORTABLE BOTTLE RACK SHALL BE GROUNDING USING EXISTING GROUNDING CLAMP IN UNLOADING AREA.
- HYDROGEN OUTLET SUPPLY PRESSURE FROM THE BULK SUPPLY TRUCK OR FROM THE PORTABLE BOTTLE RACK SHALL BE LIMITED TO 475 PSIG. PROVIDE SUITABLE REGULATOR AND RELIEF CAPABILITY FOR ACCOMMODATING THE 475 PSIG OPERATING PRESSURE/800PSIG DESIGN PRESSURE OF THE DOWNSTREAM SYSTEM.
- PROVIDE EXCESS FLOW VALVE PROTECTION DOWNSTREAM OF THE BULK SUPPLY TRUCK OR PORTABLE BOTTLE RACK PRESSURE REGULATOR. EXCESS CHECK VALVE SHALL BE RATED FOR CLOSURE AT 150 SCFH MINIMUM FLOW.
- TEMPORARY SUPPLY HOSE SHALL BE UTILIZED TO CONNECT THE EXCESS FLOW VALVE OUTLET TO THE P73 HYDROGEN MANIFOLD CONNECTION UPSTREAM OF THE P73F504 ISOLATION VALVE SHALL BE 3000 PSIG MINIMUM 14 TO 1 BURST STRENGTH 1/2" NPT CONNECTIONS AND APPROVED/RATED FOR HYDROGEN SERVICE. HOSE LENGTH IS APPROXIMATELY 80 FT. HOSE TO BE CLEARLY MARKED FOR PRESSURE RATING.
- TEMPORARY VENT HOSE SHALL BE UTILIZED FOR CONNECTING THE INCOMPRESSIBLE OUTLET CONNECTION AND DIRECTING THE VENTED GAS BACK TO THE UNLOADING STATION AREA SHALL BE 800 PSIG MINIMUM 14 TO 1 BURST STRENGTH 1/2" NPT CONNECTIONS AND APPROVED/RATED FOR HYDROGEN SERVICE. HOSE LENGTH IS APPROXIMATELY 75 FT. HOSE TO BE CLEARLY MARKED FOR PRESSURE RATING.

OPERATING DATA

SEE NOTE 6


PSIG	SCFH	F	BY	REMARKS
1	2200	125	75	NOTE 1
2	90	125	75	NOTE 1



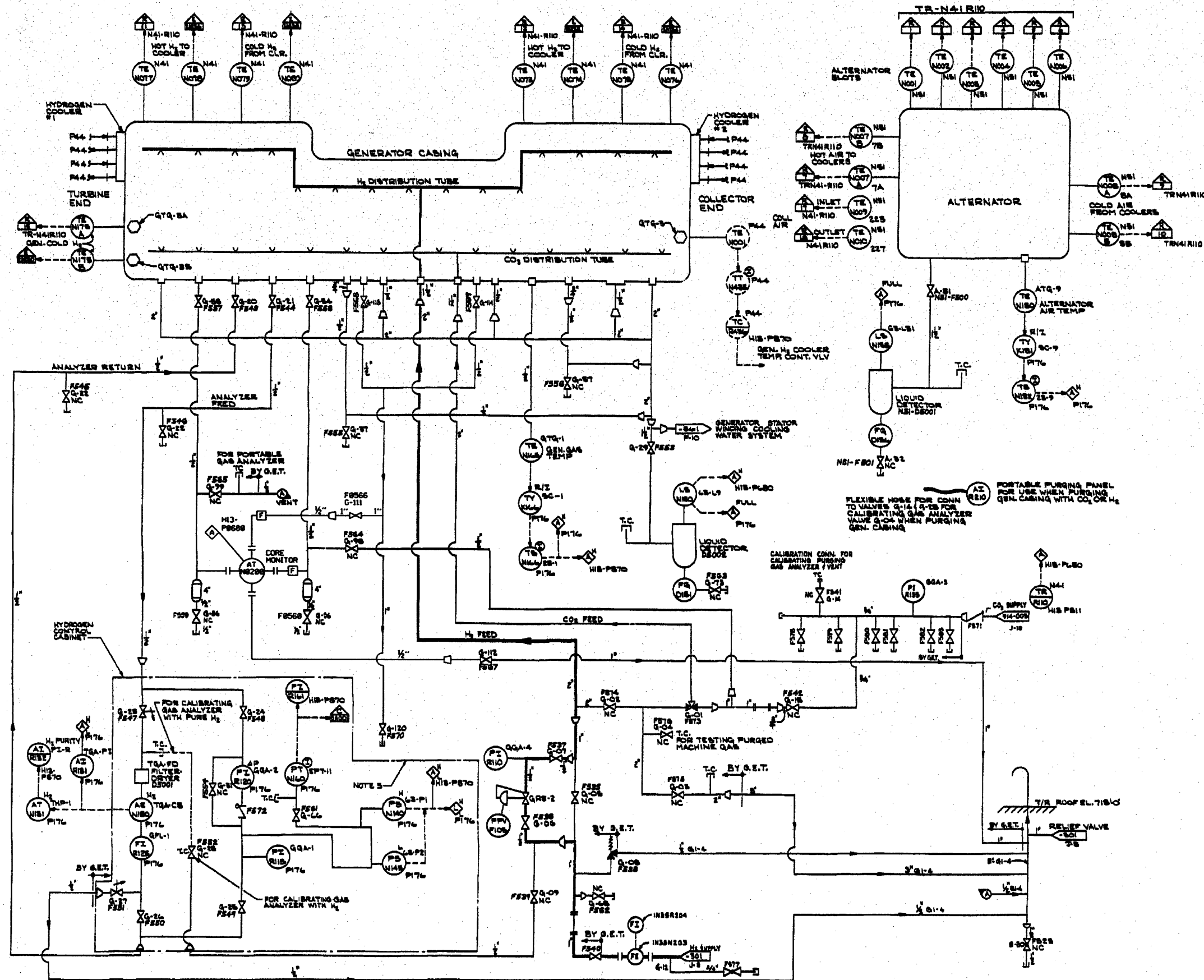
DESIGN DATA								
P	NORMAL		UPSET		BY	K	REMARK	R
	PSIG	F	PSIG	F	TIME			
1	2500	200					IN	
2	125	200					IN	

- REFERENCES: (AIR PRODUCTS)
- 100 SX 24410 SCHEMATIC FLOW DIAGRAM - BULK GAS SUPPLY SYSTEM
 - 100 SX 10074-1000 PRESSURE, RELIEFING STATION AND EXCESS FLOW BARRIERS CABINETS AND SUPPORT ASSEMBLY
 - 100 SX 20340-0000 NINE VESSEL BULK GAS PRODUCT STORAGE MODULAR ASSEMBLY MODEL 1
 - 302-0302-00000 GENERATOR H₂ AND CO₂ GAS CONTROL SYSTEM HDS
 - 100 SX 50010 HYDROGEN STORAGE AND SUPPLY SYSTEM
 - 12521300 GAS CONTROL, PIPING DIAGRAM, D.E. BRATING

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PERRY NUCLEAR POWER PLANT

Hydrogen Supply System
Figure 10.2-4
(Dwg. D-302-301)



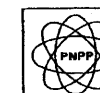
NOTES:

1. THIS DRAWING IS A SCHEMATIC DIAGRAM OF THE VENDOR SUPPLIED GAS CONTROL SYSTEM. IT IS INTENDED TO SHOW MAJOR EQUIPMENT, SYSTEM INTERFACES AND INSTRUMENTATION AND CONTROL IMPLEMENTATION IN SUFFICIENT DETAIL TO PERMIT UNDERSTANDING THE SYSTEM OPERATION.
2. A SYSTEM TROUBLE ALARM FOR THE HSI-P176 PANEL IS RETRANSMITTED TO D-302-P584.
3. ALL PANELS CARRY PREFIX HSI, UNLESS NOTED OTHERWISE. DEVICES WITHIN BOUNDARY ARE LOCATED IN THE GAS TIGHT COMPARTMENT OF THE HYDROGEN AND STATOR COOLING WATER CABINET, HSI-P176.
4. VALVES SHOWN IN NORMAL POSITION FOR AUTOMATIC OPERATION IN HYDROGEN.
5. ALL INSTRUMENTS CARRY PREFIX HSI, UNLESS NOTED OTHERWISE. G.E.T. INSTRUMENT DESIGNATIONS ARE SHOWN ADJACENT THE HSI TAG NUMBERS FOR CORRELATION WITH G.E.T. SUPPLIED DOCUMENTATION.
6. HYDROGEN PIPING WILL NOT BE ROUTED THROUGH AREAS CONTAINING SAFETY RELATED EQUIPMENT.

REFERENCES:

- D-302-222 TURBINE BUILDING CLOSED COOLING SYSTEM P44
- D-302-201 HYDROGEN SUPPLY SYSTEM H25
- D-302-205 CARBON DIOXIDE SYSTEM P54
- 4549-13-016 GENERATOR ELECTRICAL OUTLINE, G.E.T. DNG. 7742604
- 4549-13-052 GAS CONTROL PIPING DIAGRAM, G.E.T. DNG. 12501309
- 4549-13-074 CABINET OUTLINE HYDROGEN AND STATOR COOLING G.E.T. DNG. 12501307
- 4549-13-177 ALTERNATOR CONNECTIONS, G.E.T. DNG. 34018848
- 4549-13-177 ALTERNATOR MECHANICAL OUTLINE, G.E.T. DNG. 34018848
- 4549-65-027 SCHEMATIC DIAGRAM HYDROGEN AND STATOR COOLING G.E.T. DNG. 15923572
- 4549-65-048 GENERATOR PIPING CONNECTION, G.E.T. DNG. 13303962
- 4549-13-050 CO2 MANFOLD OUTLINE, G.E.T. DNG. 15923547
- 4549-13-054 FLAT TRAP OUTLINE, G.E.T. DNG. 14224540
- D-302-261 GENERATOR STATOR WINDING COOLING WATER SYSTEM H43
- 4549-65-075 GAS CONTROL PIPING DIAG. G.E.T. DNG. 2834594

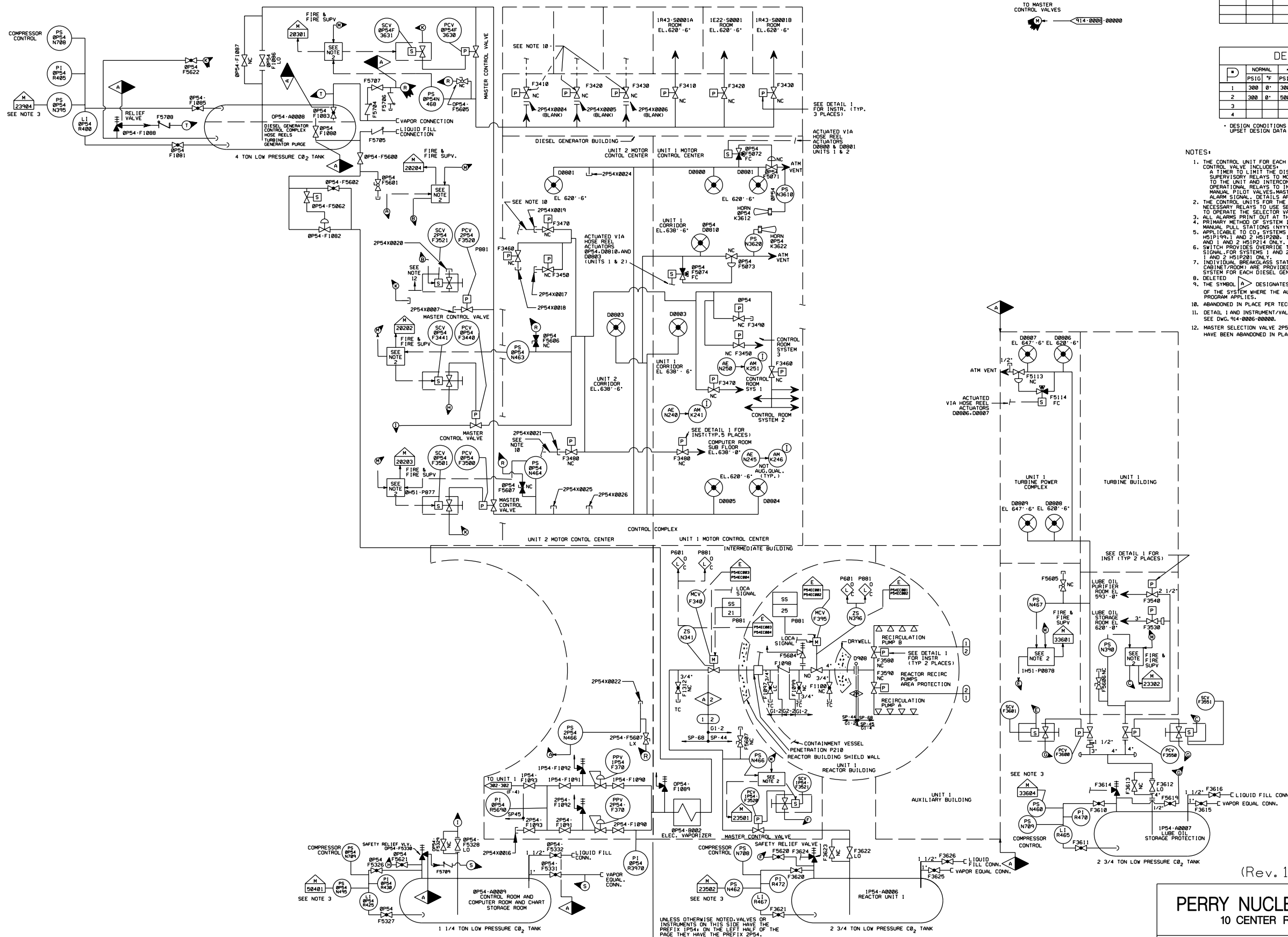
(Rev. 16 10/09)



PERRY NUCLEAR POWER PLANT

Generator H₂ and CO₂ Gas
Control System

Figure 10.2-5
(Dwg. D-302-302)



OPERATING DATA						
	PSIG	GPM	"F	BY	REMARKS	REV
	300		0"			

DESIGN DATA						
	NORMAL	UPSET	PSIG	"F	TIME	BY
1	300	0"	300	0"		
2	300	0"	500	0"		
3						
4						

- NOTES:
1. THE CONTROL UNIT FOR EACH HAZARD AREA SELECTOR CONTROL VALVE INCLUDES:
 - A TIMER TO LIMIT THE DISCHARGE PERIOD
 - SUPERVISORY RELAYS TO MONITOR POWER SUPPLY TO THE UNIT AND INTERCONNECTING CIRCUITRY AND OPERATIONAL RELAYS TO INITIATE OPERATION OF THE ELECTRO-MANUAL PILOT VALVES, MASTER VALVES, AND INITIATE A FIRE ALARM SIGNAL. DETAILS ARE SHOWN ON VENDOR DWG.
 2. THE CONTROL UNITS FOR THE MASTER CONTROL VALVES HAVE NECESSARY RELAYS TO USE SELECTOR VALVE CONTROL UNIT SIGNALS TO OPERATE THE SELECTOR VALVES. DETAILS SHOWN ON VENDOR DWG.
 3. ALL ALARMS PRINT OUT AT THE SECONDARY ALARM STATION.
 4. PRIMARY METHOD OF SYSTEM INITIATION SHALL BE BY THE LOCAL MANUAL PULL STATIONS (UNIT 1 & 2).
 5. APPLICABLE TO CO₂ SYSTEMS ASSOCIATED WITH PANELS 1 AND 2 H51P19A, 1 AND 2 H51P20A, 1 AND 2 H51P20B, 1 AND 2 H51P21A, AND 1 AND 2 H51P21B.
 6. SWITCH PROVIDES OVERRIDE TO INADVERTENT CO₂ HVAC FAN TRIP SIGNAL FOR SYSTEMS 1 AND 2 H51P19A, 1 AND 2 H51P20A, AND 1 AND 2 H51P21A ONLY.
 7. INDIVIDUAL BREAKGLASS STATIONS (1 ELECTRO-MANUAL PILOT CABINET/ROOM) ARE PROVIDED FOR MANUAL INITIATION OF THE CO₂ SYSTEM FOR EACH DIESEL GENERATOR ROOM.
 8. DELETED
 9. THE SYMBOL DESIGNATES THOSE NON-SAFETY PORTIONS OF THE SYSTEM WHERE THE AUGMENTED QUALITY ASSURANCE PROGRAM APPLIES.
 10. ABANDONED IN PLACE PER TECHNICAL ASSIGNMENT FILE 81653.
 11. DETAIL 1 AND INSTRUMENT/VALVE CROSS REFERENCE TABLE SEE DWG. 914-0005-00000.
 12. MASTER SELECTION VALVE 2P54F3521 AND PANEL 2H51P0216 HAVE BEEN ABANDONED IN PLACE PER ECP 12-0017.

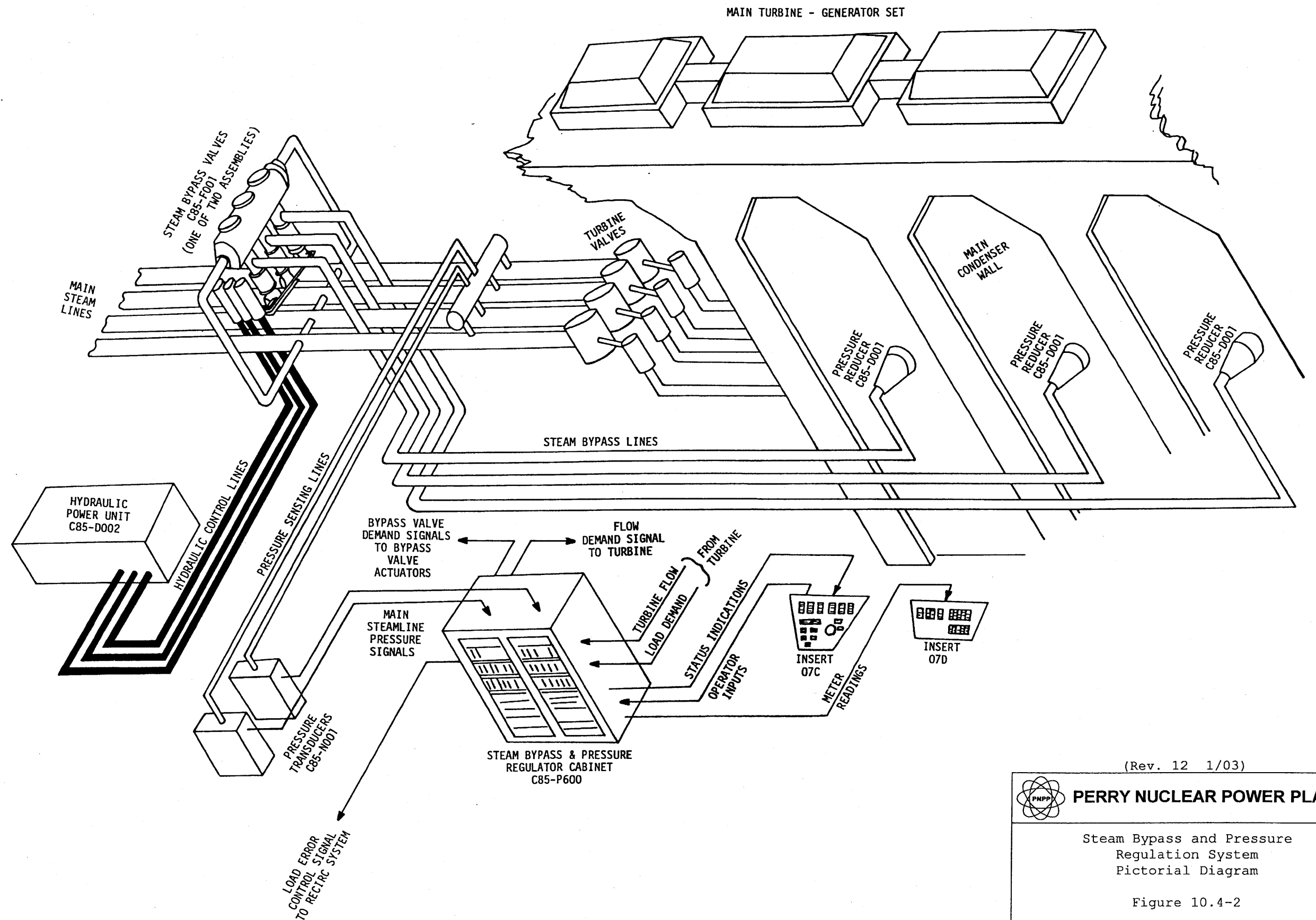
(Rev. 18 10/13)

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

FIRE SERVICE CARBON DIOXIDE

Figure 10.2-6

(DWG. D-914-0005-00000)



(Rev. 12 1/03)

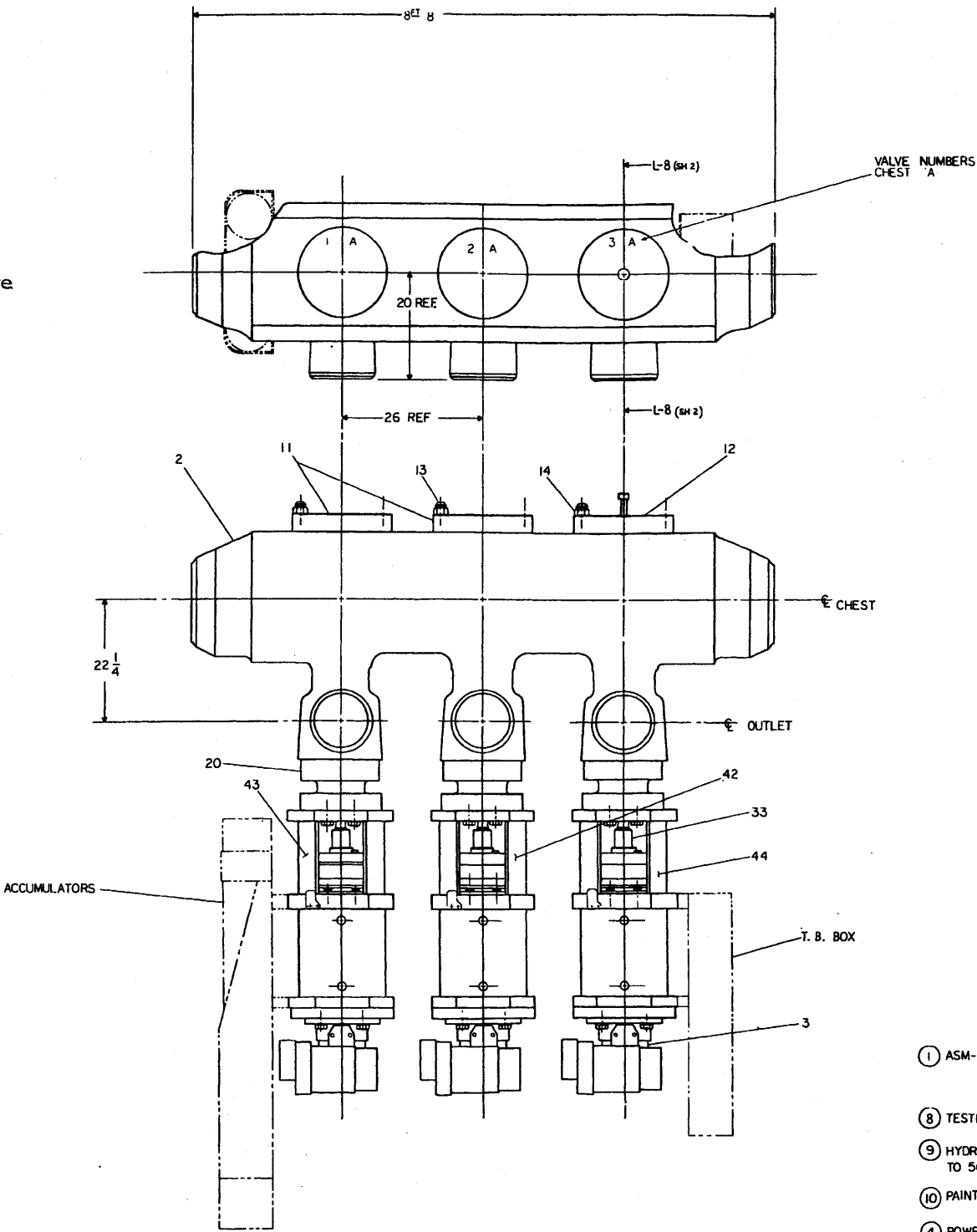
PERRY NUCLEAR POWER PLANT

Steam Bypass and Pressure
Regulation System
Pictorial Diagram

Figure 10.4-2

NOMENCLATURE

1. Assembly
2. Bypass Casing
3. Control Pac
4. Power Actuator
8. Test Instruction
9. Hydraulic Test Valve
10. Paint Instruction
11. Head
12. Head
13. Stud
14. Nut
15. Gasket
16. Valve Seat
17. Bolt
18. Lockring
19. Gasket
20. Stand
21. Stud
22. Nut
23. Gasket
24. Bushing
25. Bushing
26. Valve
27. Stem
28. Dowel
29. Locknut
30. Retainer
31. Packing Gland
32. Grafoil Pack
33. Stem Nut
34. Pin
35. Bolt
36. Bolt
37. Stud
38. Stud
39. Stud
40. Nut
41. Dowel
42. Spring Housing
43. Spring Housing
44. Spring Housing
45. Bolt
52. Lockwasher
57. Cotter Pin
60. Flange
61. Flange
62. Flange
63. Gasket
64. Gasket
65. Gasket
66. Nut



TEST DATA-FOR FACTORY USE
 TEST #1-AVE. NET UPWARD FORCE = $\frac{1728}{1} = 10 \frac{1}{2}$
 TEST #2-OPENING TIME-INDIVIDUAL VALVES = $\frac{0.26}{1} \text{ SEC} = 10 \%$
 OPENING TIME-ALL VALVES TOGETHER = $\frac{0.27}{1} \text{ SEC} = 10 \%$

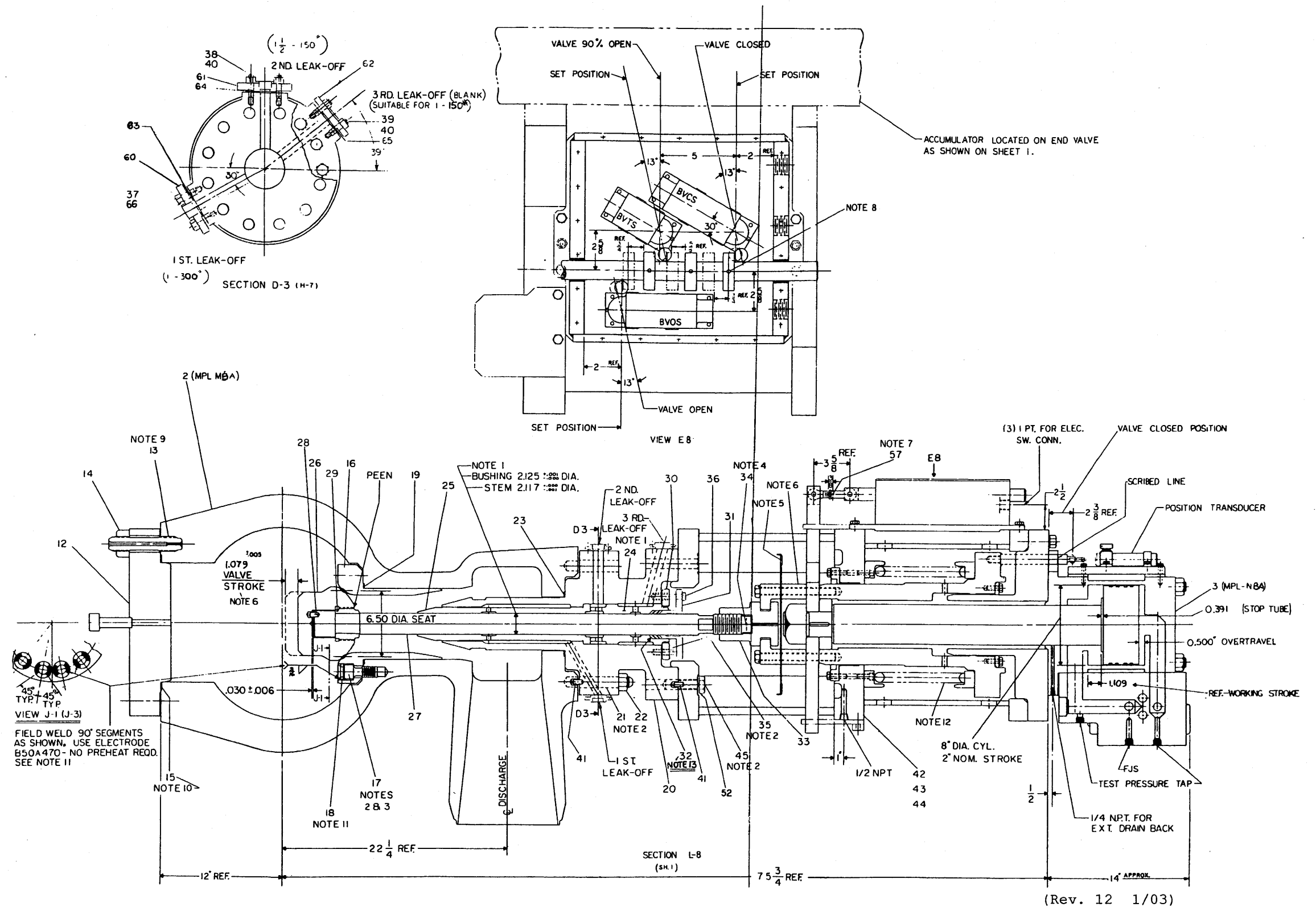
- ① ASM-GI
- ⑧ TESTING INST.
- ⑨ HYDROSTATIC TEST VALVE SEAT TO 500 PSI
- ⑩ PAINT INST.
- ④ POWER ACTUATOR

(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Bypass Valves Chest A

Figure 10.4-3 (Sheet 1 of 2)



45° TYP
45° TYP
VIEW J-1 (J-3)

FIELD WELD 90° SEGMENTS
AS SHOWN. USE ELECTRODE
B50A470 - NO PREHEAT REQD.
SEE NOTE 11

PERRY NUCLEAR POWER PLANT

Bypass Valves Chest A

Figure 10.4-3 (Sheet 2 of 2)